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ABSTRACT

This report was prepared at the request of the Hawaii State legislature to determine the status of a group of non-public schools in relation to academic achievement, per-pupil cost, and student enrollment with a hypothetical calculation of the increased costs to the public sector if all or a selected number of private schools were to close. Recommendations are made concerning alternative financial policies, and there is a survey of the alternatives which other states have employed to assist financially non-public schools and/or the parents of non-public school students. The population for the study included all the non-public schools that enrolled students above the kindergarten level, but excluded trade and technical schools for post secondary students. Participation was voluntary and 56 schools supplied data, representing about 64 percent of the total enrollment of all the non-public schools in Hawaii. Findings show that the value and quality of secular education in non-public schools, judged by student performance on national tests, is positive and significant when scored on the School Achievement Index at the elementary level and positive at the secondary level with respect to grade equivalent scores as compared with public school students. Since the non-public and public schools show the same pattern of achievement, problems, and dilemmas, the educational endeavor of the state should be viewed as unitary rather than binary.
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A STUDY OF NON-PUBLIC SCHOOLS IN HAWAII

by

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Robert B. Dunwell
Frederick P. Hachalen



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INTRODUCTION

Hawaii ranks eleventh among the states in terms of the percentage which private school enrollments bear to public school enrollment. In 1970, 13.7 per cent of the total elementary and secondary enrollments were in non-public schools. The state has an important stake in the continued economic and curricular health of these schools, for if they were to cease operation, the education of approximately 29,500 additional students would become a state responsibility.

This study is an effort to determine the status of a group of these non-public schools in several areas, i.e., academic achievement, per-pupil cost and student enrollment. Also, there is a hypothetical calculation of the increased costs to the public sector if all or a selected number of the private sector schools were to close. Finally, there is a survey of the alternatives which other states have employed or are employing to assist non-public schools and/or the parents of non-public school students financially.

Senate Resolution 105 directed the University of Hawaii to report on the following five mandates:

- 1) Evaluation of the value and quality of secular education in non-public schools using, where appropriate, existing data of the performance of non-public school students on national tests and comparison, where appropriate, with public school performance;
- 2) Projections, under varying assumptions, of the revenues and

expenditures of non-public schools over the next decade with a view towards identifying expenditure-revenue gaps and those cases which are likely to result in school closures;

- 3) Quantification of the problem of possible school closures in terms of the number of students who may be forced to seek education in the public schools and the resultant full-cost impact on the public sector;
- 4) Survey of the various policies being pursued or considered by the federal government and other jurisdictions to assist non-public schools in maintaining their role in education; and
- 5) Identification of the public objectives which may appropriately guide the formulation of public policy in this State with respect to non-public schools.

The chapters in this study are arranged so that they reflect the above stated mandates. One member of the research team held major responsibility for one or more of the mandates. The chapter number, the title, and the name of the professor who held major responsibility for the content of the chapter follow:

Chapter I	An Index of the Quality of Non-Public Schools
	Dr. Charles Araki
Chapter II	Non-Public School Tuitions and Costs
	Dr. John A. Thompson
Chapter III	Full-Cost Impact of Possible Non-Public School Closures on the Public Sector
	Dr. Robert Dunwell

Chapter IV Non-Public Higher Education in Hawaii

Dr. Frederick Haehnlen

Chapter V Survey of State Aid to Non-Public Schools

Dr. Frederick Haehnlen

Chapter VI Policy Alternatives

Dr. John A. Thompson

The Population and the Sample

The population for this study included all non-public schools in the state of Hawaii which enrolled students above the kindergarten level. Excluded were those institutions which were only pre-school and/or kindergarten. However, the kindergarten students were included in the calculations made of the schools that were included in the study. In addition, those schools which serve special education students only were not included. Also excluded, at the opposite end of the educational spectrum, were trade and technical schools for post secondary students. These exclusions were determined during a meeting with Senator Francis Wong and his staff.

The selected sample

The Senate Resolution did not bestow upon the University the right to enter private schools and demand data; therefore the sample which is used in the study represents only those schools who voluntarily agreed to participate. Some rather important schools chose not to become involved, so the sample is somewhat biased and may not be generalizable to the entire non-public school population.

Each school in the population was sent a letter outlining the

data requirements and requesting their participation (see Appendix A). The letters were sent on August 2, four days after the final authorization was received from the University that members of the Department of Educational Administration were to undertake the study. A follow-up letter was sent to those schools which did not reply by August 20.

The two communications, plus a number of follow-up telephone conversations, produced a total sample of 59 schools which agreed to furnish data and participate in the study. Subsequently three schools which had originally agreed to participate in the study withdrew their agreement for one reason or another. The final number of schools included in the data tabulations was 56. A list of schools to which letters were sent and the schools which agreed to participate may be found in Appendix B.

The non-public schools in the study represent approximately 20,244 students out of a total enrollment of 29,282 in 1970-1971, or about 64 per cent. Students listed on the Department of Education Private School List, June, 1971, which were not included in the population (i.e., pre-school/kindergarten schools, special education schools, etc.) were not included in the total enrollment. Thus, one may conclude that the sample is broadly representative of the non-public schools and their clientele; however, it is interesting to speculate about those schools which refused to furnish data.

Data Sources and Data Collection

Each school which had agreed to participate in the study was asked to name a person whom the team could contact to furnish the data. In some cases, this was the principal; in others, the fiscal

officer or the director of curriculum. All of the people were extremely helpful in providing whatever data were available.

Data collection and categorization, even with the splendid assistance the team members received from the schools, was a major factor in this study. Other than the Catholic Parochial schools there was no central source which gathered and reconciled the types of data needed to complete the study; therefore it was necessary to contact each school separately to gather the essential data.

A major concern in the collection and the reporting of the cost data was to assure that the figures from each school would be comparable with all schools. In the public schools, these cross comparisons are facilitated by employing a technique called per-pupil cost. The per-pupil cost figure is derived by adding all costs classified as administration, instruction, operation, maintenance, health service, transportation, and fixed charges, and dividing them by the number of students enrolled (calculated as either average daily membership or average daily enrollment). Since a number of non-public schools do not use the same expenditure categories as those expressed above, it was necessary to examine the accounting systems used by each school and reconcile their expenditures so they would fit into a common system for comparison purposes.

A similar problem occurred with categorizing receipts, as each school used its own method of logging the various sources of money. To match receipts with per-pupil costs, some money sources had to be carefully scrutinized, and the expenditures which had not been included were also removed from the receipt side.

The task was difficult for several reasons: 1) The financial record-keeping procedures in certain schools were, at best, fragmentary until the last two years. However, it should also be noted that several other schools had very complete and comprehensive records. 2) Several schools kept their financial records on a January-through-December fiscal year. Some manipulation of the data was necessary to get these schools on a comparable base. 3) The final decision to implement the study was not made until late in the summer; consequently data gathering was begun in August and early September, not the most propitious months, since this is traditionally the busiest time of the year for school administrators.

Since the resolution requested an estimation of full cost to the public sector if private schools were to close, it was deemed necessary to theoretically distribute the present non-public school students back into the public schools which they would be attending if the non-public schools were to close. This meant obtaining and categorizing residence and/or school data from approximately 20,000 students. Due to variability in the manner of reporting, handling this volume of data was a problem.

Achievement test score data for the non-public schools were found to be non-comparable, since each school administered tests which coincided with its curricula and instruction program. As a result, no achievement test which could be used as a common denominator was identified. Due to the changing emphases and priorities of the curricula and instruction programs of the non-public schools, test series changed from time to time which precluded the possibility of either a

consistent, historical or statistical analysis.

Reconciliation of these diverse problems meant that the team members were forced to make their analyses from data sets which were not entirely free from error in collection and categorization. However, the slight variations in the scope and quality of the data were not deemed to be a serious limitation to the overall conduct of the study.

CHAPTER I

AN INDEX OF THE QUALITY OF NON-PUBLIC SCHOOLS

Introduction

The Sixth Legislature, State of Hawaii passed Senate Resolution 105, requesting the University of Hawaii to conduct a study on the effects of non-public school closures on the public sector and the problems of non-public school financing. The resolution called for an in-depth study of five specific elements. The first of the five required elements, which this chapter purports to support, was documented as follows:

"Evaluation of the values and quality of secular education in non-public schools using, where appropriate, existing data of the performance of non-public school students on national tests and comparison, where appropriate, with public school performance."

The above task--to evaluate the value and quality of secular education in non-public schools via performance of non-public school students on national tests--seems to imply a rather academic view of the educational endeavor with the exclusion of the affective domain--the social, personal and productive dimensions. Underpinning the task are two assumptions. The first assumption is that formal education is intellectual and academic in nature and confined to the objectives of the measuring instruments administered to the students. The second is that positive values and quality are directly

proportional to positive and high scores or indexes on tests when compared with national norm references. The cause and effect relationship assumed is spurious and primitive.

The demand for some kind of testing is increasing because schools have been told to be accountable--to demonstrate publicly what they are accomplishing--(¹Lieberman, 1970; ²Bhaerman, 1970). The concept of accountability was precipitated by increasing educational costs and increasing frustration with social and political problems. The question "What are we getting for our education dollar?" is being asked throughout the nation. Whether this dollar be public or private, educators have been challenged to become more explicit and more functional in lesson plans and school budgets; to identify the gains and losses children make in reading, singing, and the many human talents; and to realize that the events of the classroom are not unrelated to the events of the street, the marketplace, and City Hall.

In the 60 years since Binet first introduced his intelligence test, testing has become the pride and despair of education. Testing runs like a powerful minor theme through most of the research and the applied work in education. Education has taken pride in testing because it is the one area which has shown clearest development and most widespread use. In education, testing is a two-edged sword which can do incalculable good as well as great harm to the individual. The recent reaction against intelligence testing in the large city schools, although emotional and in many ways misguided, brings home to us that children are judged in terms of test results and that

faith in one child's ability to learn or rationalizations of a teacher's inability to teach another child are both related to test scores.

To control the matriculation examinations of a country is to control its educational system; to develop tests which are widely used for selection and prediction purposes is to determine which human qualities are prized and which are neglected; and to develop instruments which are frequently used to classify and describe human beings is to alter human relations and to affect a person's view of himself.

Bloom³, who views testing as a systematic method of sampling one or more human characteristic and representing these results for an individual in the form of a descriptive statement or classification, discerns three very different approaches. These three approaches are Measurement, Evaluation, and Assessment.

Perhaps the first approach (historically) in measurement was the testing of human characteristics which began with the works of Galton and Binet. Galton and Binet developed the standard stimuli, tasks, and questions. The subject's responses to these standard situations were to be judged in a standard way--by trained testers. The results for each examinee were translated into some quantitative form (I.Q., raw score, time of response, etc.), which was then given further meaning by relating it to the normative data for a given sample of individuals.

In the 1930's, Ralph Tyler (1934) proposed that educational testing be concerned with the changes produced by educational means in students. He used the term evaluation to refer to a set of procedures for

appraising changes in students. The stress on appraisal of change meant that, theoretically at least, testing had to be done at two or more points in time on each individual to determine the extent of change. Since it was necessary to limit the types of changes to be tested, Tyler suggested that tests be constructed to sample the changes in students specified by the objectives of instruction--that is, the changes which were intended by the instructors, instruction, or the curriculum.

The term assessment is a very old one and refers to the attempts to assess the characteristics of individuals in relation to a particular environment, task, or criterion situation. Assessment in this sense is as much concerned with the environment as it is with the individuals who interact with the environment. Assessment characteristically begins with an analysis of the criterion and the environment in which the individual lives, learns, and works. It attempts to determine the hierarchical arrangement and consistency of as well as the conflict among the psychological pressures created and the roles expected by the environment. It then proceeds to determine the kind of evidence that is appropriate about the individuals who are to be placed in this environment, such as their relevant strengths and weaknesses, their needs and personality characteristics, and their skills and abilities.

Bloom feels that a synthesis of these three approaches to testing is more possible at this time than ever before. He further feels that these approaches (measurement, evaluation, and assessment) can be considered to be a partial view of the nature of man, the nature of

the world, and the nature and use of evidence. Bloom suggests that the synthesizing of the best utilization of each of these approaches will avoid further narrowing of the field of testing. Bloom's call for a more comprehensive approach to testing--one that fully utilizes what has already been learned coupled with a comprehensive theory of testing--suggests the complexity of describing, explaining, and predicting human characteristics.

The subject of how schools affect the development of pupils has been studied for many years. Schools are expected to "educate" our youth--to transform pupils on a large number of dimensions. A variety of attitudes, skills, and knowledges are expected to be "packed" into each pupil.

At the present time, there is little knowledge of how pupils "learn"--what processes are activated in a child's body or mind that makes him learn things. We do know that children comprehend what they are taught and express that comprehension in different ways, at different rates, and to varying degrees. However, at best, that comprehension is difficult to measure.

Whatever effects schools have on pupil achievement or pupil behavior may be said to depend upon the student's innate abilities, what he "knew" before he came to school, his peers, his parents, his socio-economic status, etc.

It has been reported that school characteristics alone account for only six per cent of differences in pupil achievement among schools. This may indicate that schools by themselves have little influence on pupil achievement.

General Design and Approach of the Study Element

The study element is defined as follows:

"Evaluation of the values and quality of secular education in non-public schools using, where appropriate, existing data of the performance of non-public school students on national tests and comparison, where appropriate, with public school performance."

The general design and approach of the study element was predicated upon the fact that this study has been requested by a public body (the Sixth Legislature--State of Hawaii). As such, public understanding of the study element was the foremost consideration in planning the design and approach of the study.

In an effort to effectuate a reasonably realistic design which addresses itself to the stated study element, the following paradigm for promoting public understanding of achievement in non-public schools was developed and utilized as a general guide for the conduct of this study.

This paradigm stresses what "ought" to be done in interpreting data on achievement in non-public schools. However, the limitation of time for the completion of this study precluded intensive efforts at the various components of the paradigm. The study was undertaken during the month of September, 1971, with the completion data specified as November 23, 1971. This gave the researcher less than three months to collect and analyze the test data and to write the final report.

Informing the public of the status of achievement in the non-public schools requires collecting, reducing, analyzing, interpreting,

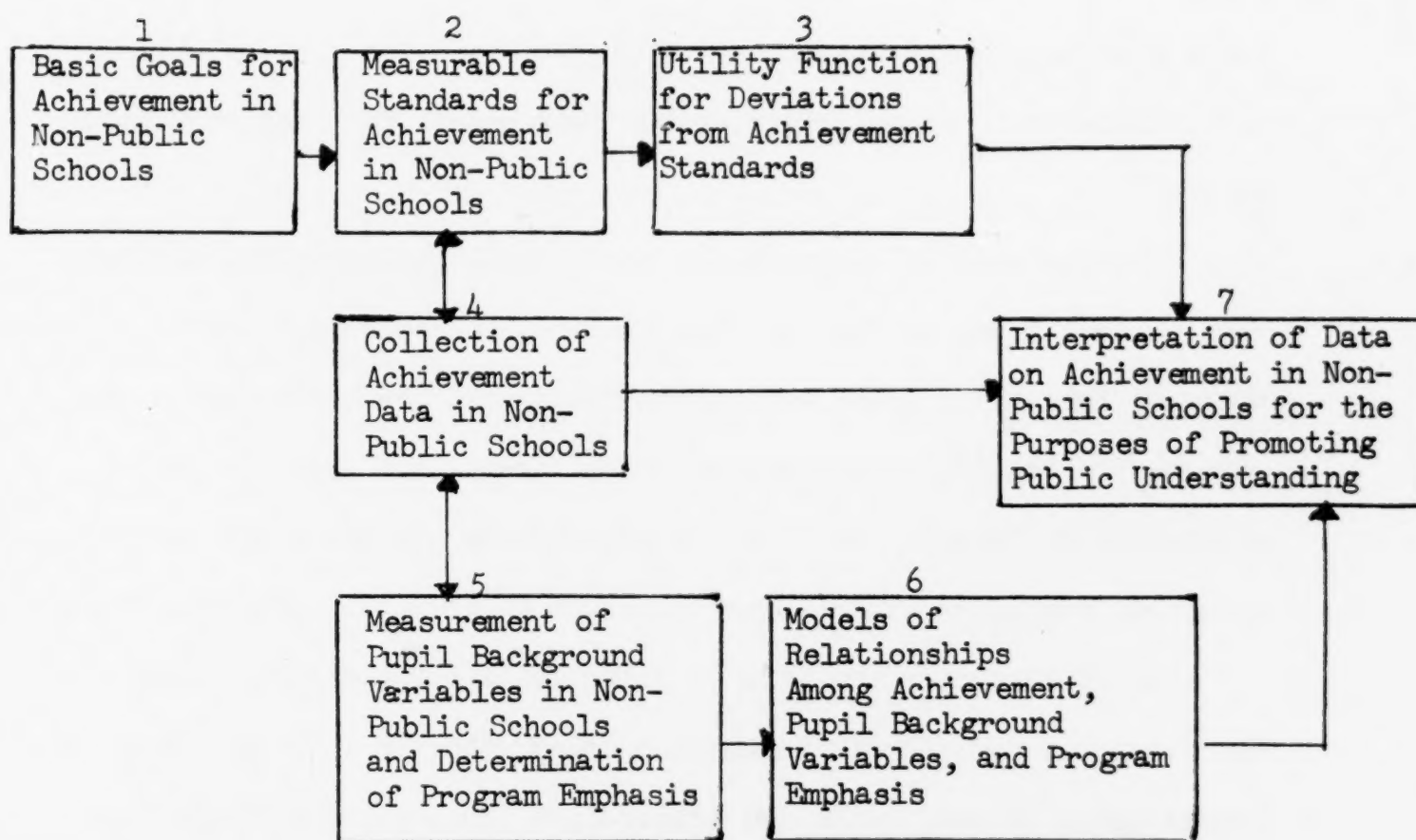


Figure 1.--A paradigm for using test results to promote public understanding.

and reporting the test data. A statement such as "The mean language achievement of 6th graders in non-public schools in Hawaii is at the fifty-fifth percentile on national norms," informs the public of achievement status. However, such a statement does not promote public understanding. Most educators would be quite cautious in interpreting this statement in terms of mean language achievement. The answer that needs to be answered is "Are Hawaii's non-public school fourth graders doing reasonable well that parents need not be concerned, or are they seriously deficient in language achievement?" To understand the meaning of statements on achievement status, the public must be provided with a description of the utility function of measurements

used. Standards for achievement consistent with broad educational goals must be clearly specified. A utility function for deviations from standards is necessary to answer "how bad is bad" and "how good is good."

Present testing programs and the typical interpretations of their results provide no utilities. For example, school district averages which differ by 0.2 grade equivalent units or 4 raw score points are, with high probability, statistically different, but are they substantively different? Most of the researchers cannot answer this question, and hence cannot attach utility to deviation from standards.

Notwithstanding the lack of clear goals for non-public education and standards for achievement coupled with the lack of models of relationship between goals and achievement, this paradigm seems to provide the tool necessary for making statements on achievement.

Each component in the paradigm for using test results to promote public understanding (Figure 1) is numbered chronologically. These components will be discussed in the following section entitled Analysis of Data in the following order:

- 1) Basic Goals for Achievement in Non-Public Schools.
- 2) Measurable Standards for Achievement in Non-Public Schools.
- 3) Utility Function for Deviations from Achievement Standards.
- 4) Collection of Achievement Data in Non-Public Schools.
- 5) Measurement of Pupil Background Variables in Non-Public Schools and Determination of Program Emphases.
- 6) Models of Relationships Among Achievement, Pupil Background Variables, and Program Emphases.

7) Interpretation of Data on Achievement in Non-Public Schools
for the Purpose of Promoting Public Understanding.

Analysis of Data

Basic goals for achievement in non-public schools

Goals for achievement in non-public education is a necessary component of this paradigm. Dunkel⁴ suggested that universal goals for education do not exist in our pluralistic society, and that school boards--the nomothetic proponents of goals--are intentionally vague in their formulations. In contrast to this view are the findings of Merwin and Womer⁵, who noted a striking degree of agreement among school personnel, university professionals, and laymen on important goals for American education.

Goals for educational achievement in non-public schools may be implicit in testing programs. On the basis of commercially available tests used, one may set the development of those skills the tests seek to measure as their goals. How appropriate are these goals? The answer lies in the structure and content of the curricula and in the composition of the pupil population in those school systems.

Identifying the goals for educational achievement in the non-public school sector may be untenable since the non-public schools differ markedly in their purposes, organization, and quality. The general or common underpinning element in all non-public school patrons, whether the schools be church-connected or independent, is that of "free-choice." These patrons "chose" to educate their children through means other than the free public school system. Although the specific educational purposes of the non-public school patrons

may differ, the underlying desire for obtaining education through means other than the free public school system seem to connote the prime purpose of the non-public system. This purpose may be stated as follows: To develop a school system which provides an alternative to the free public school system.

This primary purpose is predicated upon the argument that our nation's strength lies, in a large measure, on an outgrowth of our schools, public and non-public; and that our progress would not have been so marked had we possessed only public schools. There are doubts that a democracy demands a single system of public schools to survive. "On the contrary, it seems imperative that alternatives exist and that parents retain the privileges of surveying a range of educational opportunities available to their children and they possess the right of selecting the type of school which in their view best meets their own criteria. Competition, to the extent that it exists, is desirable and contributes to the dynamism we have grown to cherish. A public school system is obligated by conscience to be responsive to the society by which it is sponsored. A non-public school is prized precisely because it need not be responsive to the total society, but only to that constituency within bounds, from the traditional or the stereotype. It can innovate, define goals which may not be the same as other schools, specialize, and discriminate in its choice of clients."⁶

Stolle⁷ studied the extent to which the states exercise legal control over instruction in non-public elementary and secondary schools. Among the 27 states that did exercise controls over instruction,

emphasis was most often on training which would best suit young people for good citizenship during their adult life. Common requirements were in the areas of the English language, American history, the Constitution of the United States, and other state and national documents. Thus, the goals of the non-public schools have been minimally affected by state control or court decisions. Goal defining has been a relatively free-will development by both the parochial and independent schools.

In Hawaii, non-public school goals of education may be summarized most effectively by the following statement documented in a non-public school catalogue.

"Realizing that the school accepts students from a wide range of economic and cultural backgrounds, who possess high academic potential, we strive to develop each individual child to the maximum of his ability academically, physically, socially, and spiritually. Scholarship is not the schools only emphasis; the development of a healthy mental attitude for one's self as well as for others is equally important in the total educational process. Yet, it must be understood that we are committed to academic excellence with the goal of placing each boy in the college consistent with his ability and interest."

Public educational goals may be delineated into four basic dimensions. These dimensions are listed in priority order as specified by the parents of public school students in a study conducted by the Hawaii State Board of Education in 1970.⁸

- 1) Social Dimension
- 2) Intellectual Dimension
- 3) Personal Dimension
- 4) Productive Dimension

There has been no comprehensive assessment of non-public school goals in Hawaii with the exception of a Catholic School Attitudinal Survey⁹ conducted in 1971 by the Catholic Diocese. Review of the survey indicated that the Catholics surveyed favored a Religious-Spiritual-Intellectual Dimension of education.

From the standpoint of secular education, the non-public school's priority, relative to the dimensions of educational goals, probably will rank as follows:

- 1) Intellectual Dimension
- 2) Religious Dimension*
- 3) Personal Dimension
- 4) Social Dimension

General goals for achievement from which specific behavioral objectives may be developed in the non-public schools may be listed as follows in their order of priority:

- 1) Acquisition of and an appreciation for knowledge and skills in the academic disciplines.
- 2) Critical thinking and communicative skills to communicate one's ideas in speaking and writing and applying knowledge to new situations and problems.

*Religious dimension for the non-public school was substituted for the productive dimension as included in the public school priority ranking.

- 3) Understanding and internalizing the religious gospel concomitant to an understanding of moral and ethical values.
- 4) Capacity to work independently for continued growth and education.
- 5) Ability to understand human relationships in order to live honestly with one another.

The basic goals for achievement in secular education in non-public schools generally center around the following basic subject areas:

- 1) Reading and Language Arts
- 2) Mathematics
- 3) Science
- 4) Social Studies

Measurable standards for achievement in non-public schools

Measuring achievement is no small problem. Gathering "hard-data" evidence of students' learning is a new and ominous challenge. Since we simply do not know how students learn, educators are forced to develop assumptions which may be questionable. In addition, the inability to develop learning objectives that will accommodate all types of learning--the cognitive, affective and motor--have amplified the problem of the primitivity of useable evaluation tools to determine whether students have attained those objectives to the degree sought. As a result, statements of objectives are written "to the test;" that is, to reflect the types of learning that can most readily be measured with standardized tests of achievement (cognitive).

Test results are usually given meaning by relating them to standardized or normative data of some sort. Test makers have devoted a great deal of time and resources to the securing of normative data, especially for educational achievement. Quite frequently, more resources are expended on the development of norms or standards than on the construction of the instruments themselves.

The usual type of norm is the "distributive norm," which is obtained by giving the test to a well defined sample of individuals and by distributing the individuals appropriately on the basis of the best results. The acceptance of the national median or mean performance as a standard carries with it two assumptions. First, it is assumed that the test in question is as appropriate to the curriculum in a given school system as it is to the great diversity of curricula encountered across the nation. Second, it is assumed that the children in a given school system are, in their interests, abilities, and aptitudes, like those in the publisher's norm sample.

The grade-equivalent scores

Standardized achievement tests have the very appealing feature of yielding grade-equivalent scores. Raw scores, usually the number of items right, are transformed into scores which indicate (from some national reference-group student population) the grade placement of all the students who got a particular raw score. These transformed scores are called "grade equivalents." While the raw scores are not meaningful to people unacquainted with the particular test, the grade equivalents are widely accepted by teachers and parents.

Grade equivalents are beset with interpretation problems. First, grade equivalents available from most publishers are for the entire test only and not for test items. Second, the average annual "growth" for most standardized tests consists only of a few raw-score points. This factor precludes specific differentiation of group or individual achievement growth. The following illustration shows the difference between a grade equivalent of 5.0 and 6.0 with four of the most popular test batteries.

Gain Needed in Number of Right Items to Advance
One Grade Equivalent (G.E.)

<u>Test</u>	Raw Score for G.E. <u>5.0</u>	Raw Score for G.E. <u>6.0</u>	Items Needed to <u>Advance One G.E.</u>
Comprehensive Test of Basic Skills: Reading Compre- hension	20	23	3
Metropolitan Achieve- ment Test: Spelling	24	31	7
Stanford Achievement Test, Form W: Word Meaning	18	26	8
Iowa Test of Basic Skills: Arithmetic Concepts	10	14	4

Although beset with problems, the grade equivalent will continue to be utilized for reporting achievement scores until a better report procedure is invented. However, House¹¹ claims that the availability of a better report procedure will not necessarily result in its use by educators because the risks outweigh the rewards.

For this study, grade equivalent scores will be interpreted to determine school achievement. Mean grade equivalent scores for various grade levels were obtained for each school participating in this study. For elementary schools, grade equivalent scores for the sixth and seventh grades were utilized to represent the school grade equivalent scores. For the high schools, grades nine and ten were utilized.

Due to the limitation of time and the availability of test data, only two grade levels were selected to represent the school achievement index.

Since the most common organizational pattern for the non-public schools seems to be the K-8 elementary and 9-12 secondary, grades six and seven were selected to represent the elementary school achievement index and grades nine and ten to represent the secondary school index.

The School Achievement Index

Complete and consistent test data on non-public schools in Hawaii and throughout the nation are virtually non-existent, because their testing programs, especially those of independent schools, differ significantly. The resultant differences are due to differences in curricula which in turn are due to differences in the purposes

and objectives of the schools.

In Hawaii, the most complete and consistent test data were found among the schools of the Diocesan Board of Education. The Superintendent of Schools of the Catholic Diocese maintains records of past and present test data for each school in the Diocese. Generally, the schools of the Catholic Diocese administered the Metropolitan Achievement Test in its elementary schools and the National Educational Development Tests in its secondary schools.

Similar test data were not available for the independent schools. As a result only a status analysis of achievement scores was possible. A status analysis, foregoing any consideration of past performances on achievement measures, shows the present state of achievement scores only.

Inasmuch as the utilization of many different achievement tests yielded different types of achievement measures, i.e., grade equivalents, mid-percentile scores, and percentile bands, a standard index of achievement was deemed necessary.

For the purpose of this study, the School Achievement Index (SAI) will be used as the determinant of school achievement in academic areas. The following procedures were utilized to obtain each school's School Achievement Index.

Procedure A (For schools utilizing achievement tests which report scores in grade equivalents):

1) Grade Mean Equivalent	-	Base Grade Equivalent
$\frac{(\sum \text{ of individual scores})}{(\text{ number of individuals})}$		(Grade level + month test administered)
= Mean Grade Equivalent		

- 2) Mean Grade Equivalent Score for School
($\bar{X}$ School G.E.)

$$= \frac{\sum \text{of mean Grade Equivalent (composite)}}{\text{Number of Grade(s)}}$$

- 3) School Achievement Index = $\bar{X}$ School G.E. x 10
(In months)

- 4) S.A.I. = $\bar{X}$ School G.E. x 10

Procedure B (For schools utilizing achievement tests which report scores in percentile):

- 1) Grade Mean Percentile - Base Mean Percentile

$$\frac{(\sum \text{of Individual Percentile})}{(\text{Number of Individuals})} \quad (50\text{ile})$$

= Mean Grade Percentile

- 2) Mean Grade Percentile for School
($\bar{X}$ School Percentile)

$$\frac{\sum \text{of Mean Grade Percentile (Composite)}}{\text{Number of Grade(s)}}$$

- 3) School Achievement Index = $\bar{X}$ School Percentile x .10
(In months)

- 4) S.A.I. = $\bar{X}$ School Percentile x .10

The School Achievement Index (SAI) will be reported by number of months above (+) or below (-) grade equivalent or Q_2 (50%). For instance, an SAI of +4.5 means that a school is achieving four and one-half half months above grade equivalent (0) or 45%ile points more than Q_2 (50%). For an SAI of -4.5 the opposite of the above example is applicable. An SAI of 0 means that the school is achieving at grade equivalent or at Q_2 (50%ile).

Although the SAI may seem parsimonious and not very copacetic, the ease by which the SAI may be computed with its national norm reference supports its use for the purpose of this study.

An SAI was computed for each non-public school that participated in this study by translating the reporting scores for the following standardized achievement tests:

<u>Test</u>	<u>Type of Reporting Score</u>
1) Metropolitan Achievement Test	Grade Equivalent
2) Stanford Achievement Test	Grade Equivalent
3) Iowa Test of Basic Skills	Grade Equivalent
4) California Achievement Test	Grade Equivalent
5) Tests of Academic Progress	Precentile
6) Sequential Test of Educational Progress	Percentile
7) National Educational Development Test	Percentile

Utility function for deviations from achievement standards

A utility function for deviations from standards is necessary to answer "how bad is bad" and "how good is good." As mentioned previously, present testing programs and the typical interpretations of their results provide no utilities.

In an effort to assign a utility function to deviations from standards, the SAI was developed. The SAI alone, however, may have little utility for deviation from standards, unless the SAI (in months) be determined to designate significance in achievement, either positively or negatively. For the purpose of this study, a +3.0 or higher SAI will be designated as significant achievement and a -3.0 or lower SAI will be designated as significant under-achievement.

Collection of achievement data in non-public schools

In spite of the limited availability of consistent and comparable data on non-public schools, the cooperative and professional attitude demonstrated by test data custodians of the non-public schools made the following data presentation and analysis possible.

Each school that agreed to participate in the study was contacted for information about its testing program and data availability. Based upon data availability, each school was asked to submit mean grade scores for each selected test and sub-test.

For the elementary schools, mean grade scores for the sixth and seventh grades were obtained. In cases where the schools did not administer tests to grades six or seven, fifth grade scores were obtained. For the high school level, mean grade scores for the ninth and tenth grades were obtained. Where scores for grades nine and ten were not available, other available grade level scores were included.

Achievement data for non-public schools were collected by the following basic groupings:

- 1) Church-connected elementary schools (Oahu only) (Table I-1)
- 2) Church-connected elementary schools (Neighbor Islands) (Table I-2)
- 3) Church-connected secondary schools (State) (Table I-3)
- 4) Independent elementary schools (State) (Table I-4)
- 5) Independent secondary schools (State) (Table I-5)

Achievement data were analyzed by the above basic groupings. Analysis of the data for each basic grouping will be discussed in the following section.

Table I-1 shows achievement scores for church-connected elementary schools on Oahu. Achievement results from 24 church-connected schools are presented by subject area. In the last column is the computed School Achievement Index for each school. The mean SAI (School Achievement Index) for all 24 church-connected elementary schools was +4.7 or four and seven-tenths months above grade equivalent 0. It was specified earlier that an SAI of +3.0 or higher is significant achievement relative to the standardized tests administered.

Of the 24 schools under discussion, only three schools showed an SAI which was below grade equivalent. These schools are #9 (-9.0 or 9 months below grade equivalent), and #20 (-4.0 or 4 months below grade equivalent). Three schools showed an SAI of 0 which signifies achievement at grade equivalent. These are schools #7, #14, and #21.

In mean grade equivalent and achievement by subject areas, church-connected elementary schools on Oahu showed the highest mean grade equivalent (8.0) in Language. This means that, in the language area, the church-connected elementary schools are performing nine and four-tenths months above grade equivalent.

Among the general subject area means, total math and science showed the lowest mean grade equivalent of 7.2 for both areas. Although a mean grade equivalent of 7.2 may be substantially lower when compared to other subject area mean grade equivalent, it is still higher than the base grade equivalent of 7.0.

TABLE I-1

CHURCH-CONNECTED ELEMENTARY SCHOOLS (OAHU ONLY)

1970-1971 Standardized Achievement Test Scores by Subject Area,
School, Grade Level, and Grade Equivalent

School Code Number	Type of Achievement Test	Grade Level	Total Reading		Language		Total Math		Science		Social Studies		Composit Score		Base Grade Equiv.	SAI
			Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)		
1	MAT	Grade 6 Grade 7	6.7 (+ .1) 7.8 (+ .2)	7.4 (+ .8) 8.7 (+1.1)	6.6 (0.0) 7.8 (+ .2)	6.8 (+ .2) 8.0 (+ .4)	6.9 (+ .3) 8.0 (+ .4)	6.6 7.6	+3.5							
2	MAT	Grade 6 Grade 7	7.3 (+1.3) NG	6.7 (+ .7) NG	6.1 (+ .1) NG	7.1 (+1.1) NG	6.9 (+ .9) NG	6.0 NG	+9.0							
3	MAT	Grade 5 Grade 6	6.6 (+1.6) 7.1 (+1.1)	ND ND	5.1 (+ .1) 5.9 (- .1)	ND ND	5.9 (+ .9) 6.5 (+ .5)	5.0 6.0	+7.0							
4	MAT	Grade 6 Grade 7	6.9 (+ .3) 9.3 (+1.7)	7.8 (+1.2) 9.9 (+2.3)	6.8 (+ .2) 8.6 (+1.0)	7.3 (+ .7) 8.0 (+ .4)	7.2 (+ .6) 8.6 (+1.0)	6.6 7.6	+8.0							
5	MAT	Grade 6 Grade 7	7.5 (+ .9) 8.2 (+ .6)	7.5 (+ .9) 8.9 (+1.3)	7.7 (+1.1) 9.1 (+1.5)	7.1 (+ .5) 7.7 (+ .1)	7.4 (+ .8) 8.4 (+ .8)	6.6 7.6	+8.0							
6	ITBS	Grade 6 Grade 7	ND 8.5 (+ .9)	ND 9.1 (+1.5)	ND 8.1 (+ .5)	ND NA	ND 8.5 (+ .9)	ND 7.6	+9.0							
7	MAT	Grade 6 Grade 7	6.6 (0.0) 6.4 (-1.2)	7.6 (+1.0) 7.6 (0.0)	7.1 (+ .5) 7.5 (- .1)	6.5 (- .1) 7.1 (- .5)	7.0 (+ .4) 7.2 (- .4)	6.6 7.6	0							
8	MAT	Grade 6 Grade 7	6.6 (0.0) 8.0 (+ .4)	7.0 (+ .4) 8.7 (+1.1)	6.6 (0.0) 8.0 (+ .4)	6.8 (+ .2) 7.6 (0.0)	6.7 (+ .1) 8.0 (+ .4)	6.6 7.6	+2.5							
9	MAT	Grade 6 Grade 7	6.0 (- .6) 7.8 (+ .2)	5.9 (- .7) 7.6 (0.0)	5.7 (- .9) 7.3 (- .3)	5.4 (-1.2) 7.6 (0.0)	5.7 (- .9) 7.6 (0.0)	6.6 7.6	-9.0							
10	MAT	Grade 6 Grade 7	6.6 (0.0) 7.3 (- .3)	8.0 (+1.4) 8.4 (+ .8)	7.3 (+ .7) 8.1 (+ .5)	7.3 (+ .7) 7.1 (- .5)	7.3 (+ .7) 7.8 (+ .2)	6.6 7.6	+4.5							
11	MAT	Grade 6 Grade 7	6.7 (+ .1) 8.1 (+ .5)	8.1 (+1.5) 9.6 (+2.0)	6.9 (+ .3) 7.4 (- .2)	6.7 (+ .1) 7.1 (- .5)	7.0 (+ .4) 8.0 (+ .4)	6.6 7.6	+4.0							
12	MAT	Grade 6 Grade 7	7.3 (+ .7) 8.8 (+1.2)	8.0 (+1.4) 9.2 (+1.6)	6.9 (+ .3) 8.9 (+1.3)	6.8 (+ .2) 7.9 (+ .3)	7.2 (+ .6) 8.6 (+1.0)	6.6 7.6	+8.0							
13	MAT	Grade 6 Grade 7	7.3 (+ .7) 8.9 (+1.3)	7.4 (+ .8) 9.6 (+2.0)	6.9 (+ .3) 8.1 (+ .5)	6.5 (- .1) 7.5 (- .1)	7.0 (+ .4) 8.5 (+ .9)	6.6 7.6	+6.5							
14	MAT	Grade 6 Grade 7	6.1 (+ .8) NG	7.1 (+ .2) NG	7.6 (+ .7) NG	ND NG	6.9 (0.0) NG	6.9 NG	0.0							
15	MAT	Grade 6 Grade 7	6.4 (- .2) 7.4 (- .2)	7.2 (+ .6) 7.6 (0.0)	5.6 (-1.0) 6.7 (- .9)	5.8 (- .8) 7.0 (- .6)	6.2 (- .4) 7.2 (- .4)	6.6 7.6	-4.0							

TABLE I-1 (Continued)

School Code Number	Type of Achievement Test	Grade Level	Total Reading		Language		Total Math		Science		Social Studies		Composit Score		Base Grade Equiv.		SAI
			Gr. Equiv.	(Diff)	Gr. Equiv.	(Diff)	Gr. Equiv.	(Diff)	Gr. Equiv.	(Diff)	Gr. Equiv.	(Diff)	Gr. Equiv.	(Diff)			
16	MAT	Grade 6 Grade 7	6.9 (+ .3) 7.3 (- .3)		7.6 (+1.0) 9.0 (+1.4)		6.7 (+ .1) 7.8 (+ .2)		7.1 (+ .5) 6.8 (- .8)		7.3 (+ .7) 7.1 (- .5)		7.1 (+ .5) 7.6 (0.0)		6.6 7.6		+ 5.0
17	CAT	Grade 6 Grade 7	ND 9.7 (+2.3)		ND 9.9 (+2.5)		ND 8.8 (+1.4)		ND ND		ND ND		ND 9.4 (+2.0)		ND 7.4		+20.0
18	SAT	Grade 6 Grade 7	8.1 (+1.2) 10.2 (+2.3)		8.8 (+1.9) 8.8 (+ .9)		7.5 (+ .6) 8.5 (+ .6)		10.0 (+3.1) 11.0 (+3.1)		8.2 (+1.3) 10.6 (+2.7)		8.5 (+1.6) 9.8 (+1.9)		6.9 7.9		+17.5
19	MAT	Grade 6 Grade 7	6.4 (- .2) 8.0 (+ .4)		7.0 (+ .4) 8.7 (+1.1)		6.6 (0.0) 7.8 (+ .2)		6.5 (- .1) 7.6 (0.0)		6.6 (0.0) 8.0 (+ .4)		6.6 (0.0) 8.0 (+ .4)		6.6 7.6		+ 4.0
20	MAT	Grade 6 Grade 7	6.6 (0.0) NG		6.0 (- .6) NG		6.2 (- .4) NG		6.2 (- .4) NG		6.0 (- .6) NG		6.2 (- .4) NG		6.6 NG		- 4.0
21	MAT	Grade 6 Grade 7	6.6 (0.0) 8.0 (+ .4)		6.6 (0.0) 8.6 (+1.0)		6.7 (+ .1) 7.3 (- .3)		6.0 (- .6) 7.5 (- .1)		5.9 (- .7) 7.8 (+ .2)		6.4 (- .2) 7.8 (+ .2)		6.6 7.6		0.0
22	MAT	Grade 6 Grade 7	6.9 (+ .3) 8.2 (+ .6)		7.1 (+ .5) 8.7 (+1.1)		6.6 (0.0) 7.6 (0.0)		6.5 (- .1) 7.6 (0.0)		7.3 (+ .7) 8.0 (+ .4)		6.9 (+ .3) 8.0 (+ .4)		6.6 7.6		+ 3.5
23	MAT	Grade 6 Grade 7	7.4 (+ .8) 8.2 (+ .6)		7.5 (+ .9) 8.4 (+ .8)		6.8 (+ .2) 7.7 (+ .1)		6.8 (+ .2) 7.5 (- .1)		6.8 (+ .2) 7.8 (+ .2)		7.1 (+ .5) 7.9 (+ .3)		6.6 7.6		+ 4.0
24	MAT	Grade 6 Grade 7	7.1 (+ .5) 8.2 (+ .6)		7.6 (+1.0) 8.7 (+1.1)		6.8 (+ .2) 8.0 (+ .4)		7.0 (+ .4) 8.7 (+1.1)		7.3 (+ .7) 8.3 (+ .7)		7.2 (+ .6) 8.4 (+ .8)		6.6 7.6		+ 7.0
Mean Grade Equiv. and Achievement by Subject Area			6.5	7.4 (+ .50)	8.0 (+ .94)		7.2 (+ .23)		7.2 (+ .17)		7.4 (+ .33)		7.4 (+ .42)		7.0		+ 4.7

NA - Not Applicable
 NG - No Grade Level at School
 ND - No Data Available
 SAI - School Achievement Index
 MAT - Metropolitan Achievement Test
 CAT - California Achievement Test
 SAT - Stanford Achievement Test
 ITBS - Iowa Test of Basic Skills

Table I-2 shows achievement scores for church-connected elementary schools on the Neighbor Islands. Even a cursory review of Table I-2 will indicate clearly that the Neighbor Island mean SAI is significantly below mean grade equivalent scores. The mean SAI for the nine Neighbor Island church-connected elementary schools showed a -5.8 or five and eight-tenths months below grade equivalent. This significant under-achievement index may have critical implications for the future planning of the Neighbor Island church-connected elementary schools.

The pattern of the Neighbor Island church-connected elementary schools in mean grade equivalent and achievement by subject areas was similar to that of the church-connected elementary schools on Oahu. They showed relatively higher scores in language and lower scores in mathematics.

Of the nine individual schools on the Neighbor Islands, eight schools showed a negative SAI. Only one school, #25, showed significant achievement with an SAI of +3.0. One school, #33, showed a -10.0 SAI which indicates under-achievement by one grade level or ten months below grade equivalent.

Table I-3 shows achievement scores for church-connected secondary schools throughout the state. Again, the Neighbor Island schools showed under-achievement with an SAI of -.3 and -.5 for schools #40 and #41 respectively.

The overall mean SAI for the eight church-connected secondary schools was +1.4 or one and four-tenths months above grade level equivalent. Although the SAI of +1.4 is not significant, church-

TABLE I-2

CHURCH-CONNECTED ELEMENTARY SCHOOLS (OUTER ISLANDS)

1970-1971 Standardized Achievement Test Scores by Subject Area,
School, Grade Level, and Grade Equivalent

School Code Number	Type of Achievement Test	Grade Level	Total Reading		Language		Total Math		Science		Social Studies		Composit Score		Base Grade Equiv.	SAI
			Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)	Gr. Equiv. (Diff)		
25	MAT	Grade 6 Grade 7	6.8 (+ .2) 8.2 (+ .6)	7.6 (+1.0) 8.8 (+1.2)	6.0 (- .6) 7.5 (- .1)	6.6 (0.0) 7.6 (0.0)	6.9 (+ .3) 8.1 (+ .5)	6.8 (+ .2) 8.0 (+ .4)	6.6 7.6	+ 3.0						
26	MAT	Grade 6 Grade 7	6.0 (- .6) NG	6.7 (+ .1) NG	6.0 (- .6) NG	6.0 (- .6) NG	6.0 (- .6) NG	6.1 (- .5) NG	6.6 NG	- 5.0						
27	MAT	Grade 6 Grade 7	5.7 (- .9) NG	6.2 (- .4) NG	6.0 (- .6) NG	5.8 (- .8) NG	6.0 (- .6) NG	5.9 (- .7) NG	6.6 NG	- 7.0						
28	MAT	Grade 6 Grade 7	5.3 (- .7) NG	5.7 (- .9) NG	5.4 (-1.2) NG	5.3 (-1.3) NG	5.5 (-1.1) NG	5.4 (-1.2) NG	6.6 NG	-12.0						
29	MAT	Grade 6 Grade 7	5.7 (- .9) 7.1 (- .5)	6.4 (- .2) 7.6 (0.0)	6.2 (- .4) 7.5 (- .1)	5.8 (- .8) 7.1 (- .5)	6.0 (- .6) 7.3 (- .3)	6.0 (- .6) 7.3 (- .3)	6.6 7.6	- 4.5						
30	MAT	Grade 6 Grade 7	6.2 (- .4) 7.4 (- .2)	6.7 (+ .1) 8.0 (+ .4)	6.4 (- .2) 7.3 (- .3)	5.8 (- .8) 7.0 (- .6)	6.0 (- .6) 6.6 (-1.0)	6.2 (- .4) 7.3 (- .3)	6.6 7.6	- 3.5						
31	MAT	Grade 6 Grade 7	5.7 (- .9) NG	6.2 (- .4) NG	5.4 (+1.2) NG	5.8 (- .8) NG	5.6 (-1.0) NG	5.7 (- .9) NG	6.6 NG	- 9.0						
32	MAT	Grade 6 Grade 7	5.8 (- .8) NG	6.0 (- .6) NG	6.6 (0.0) NG	6.0 (- .6) NG	6.0 (- .6) NG	6.1 (- .5) NG	6.6 NG	- 5.0						
33	MAT	Grade 6 Grade 7	6.2 (- .4) 5.8 (-1.8)	6.2 (- .4) 5.7 (-1.9)	5.9 (- .7) 6.2 (-1.4)	5.8 (- .8) 6.2 (-1.4)	6.2 (- .4) 6.4 (-1.2)	6.1 (- .5) 6.1 (-1.5)	6.6 7.6	-10.0						
Mean Grade Equiv. and Achievement by Subject Area			6.5	6.3 (- .56)	6.7 (- .15)	6.2 (- .69)	6.3 (- .38)	6.3 (- .52)	6.9	- 5.8						

NG - No Grade Level at School

SAI - School Achievement Index

MAT - Metropolitan Achievement Test

TABLE I-3

CHURCH-CONNECTED SECONDARY SCHOOLS (STATE)

1970-1971 Standardized Achievement Test Scores by Subject Area,
School, Grade Level, and Mid-percentile Scores

School Code Number	Type of Achievement Test	Grade Level	English Usage	Math Usage	Soc. Stud. Rdg.	Nat. Sci. Rdg.	Word Usage	National Percentile (Composite)	SIA
34	TAP	Grade 9 Grade 11	94 90	98 96	66 78	80 65	94 95	93 89	+4.1
35	NEDT	Grade 9 Grade 10	69 65	70 68	70 59	71 61	72 66	73 68	+2.1
36	NEDT	Grade 9 Grade 10	69 60	59 53	66 53	52 57	61 60	62 55	+ .9
37	NEDT	Grade 9 Grade 10	ND 55	ND 70	ND 63	ND 65	ND 59	ND 66	+1.6
38	NEDT	Grade 9 Grade 10	71 69	65 66	70 68	69 59	80 76	74 70	+2.2
39	NEDT	Grade 9 Grade 10	55 51	70 58	61 53	67 57	67 53	68 55	+1.2
40	NEDT	Grade 9 Grade 10	ND 64	ND 57	ND 47	ND 46	ND 45	ND 47	- .3
41	NEDT	Grade 9 Grade 10	42 49	60 35	60 53	56 45	55 46	52 38	- .5
Mean Grade Percentile by Subject Area		9.5	64.5	66.0	61.9	60.7	66.3	65.0	+1.4

NG - No Grade Level at School
 ND - No Data Available
 TAP - Tests of Academic Progress
 NEDT - National Educational Development Test

connected secondary schools are performing slightly above grade equivalent. Only one school, #34, showed an SAI (+4.1) which is slightly higher than grade level equivalent.

In mean grade percentile by subject area, the church-connected secondary schools showed the highest mean percentile (66.3) in the area of word usage (language) and the lowest mean percentile (60.7) in science. The mean percentile by subject area shows a pattern which is similar to that of the church-connected elementary schools--higher scores in language and lower scores in science.

Table I-4 shows the achievement scores for the independent elementary schools participating in this study. All of these are located on Oahu. All four independent elementary schools showed an SAI which is significantly above the grade level equivalent. The mean SAI for all schools was +8.0 or eight months above grade level equivalent. This significant achievement index of +8.0 indicates nearly a whole grade level above the grade equivalent. One school, #43, showed an SAI of +18.0 which is almost two whole grade levels above grade equivalent.

In mean grade equivalent and percentile by subject areas, the independent elementary schools showed the highest scores in science and mathematics with language being relative lower. The higher science-math scores and lower language scores of the independent schools are in direct contrast to the higher language scores and lower math-science scores of the church-connected elementary schools.

Table I-5 shows the achievement scores for the participating independent secondary schools throughout the state. The overall mean

TABLE I-4

INDEPENDENT ELEMENTARY SCHOOLS (OAHU)

1970-1971 Standardized Achievement Test Scores by Subject Area,
School, Grade Level, Grade Equivalent and Mid-Percentile

School Code Number	Type of Achievement Test	Grade Level	Total Reading Gr. Equiv. (Diff)	Language Gr. Equiv. (Diff)	Total Math Gr. Equiv. (Diff)	Science Gr. Equiv. (Diff)	Social Studies Gr. Equiv. (Diff)	Composit Score Gr. Equiv. (Diff)	Base Grade Equiv.	SAI
42	CAT	Grade 5 Grade 6	6.5 (+ .7) ND	6.3 (+ .5) ND	6.1 (+ .3) ND	ND ND	ND ND	6.5 (+ .7) ND	5.8 ND	+ 7.0
43	SAT	Grade 5 Grade 6	7.5 (+1.8) 8.9 (+2.2)	7.5 (+1.8) 8.4 (+1.7)	6.6 (+1.1) 9.2 (+2.5)	7.7 (+2.0) 9.2 (+2.5)	6.8 (+1.1) 8.9 (+2.2)	7.1 (+1.4) 8.9 (+2.2)	5.7 6.7	+18.0
44	SAT	Grade 5 Grade 6	7.2 (+1.4) 7.6 (+ .8)	6.6 (+ .8) 6.4 (- .4)	5.4 (- .4) 6.9 (+ .1)	6.6 (+ .8) 8.0 (+1.2)	5.8 (0.0) 6.5 (- .3)	6.3 (+ .5) 7.1 (+ .3)	5.8 6.8	+ 4.0

Mean Grade Equiv.
and Achievement
by Subject Area

5.5	7.5 (+1.3)	7.0 (+ .8)	6.8 (+ .7)	7.8 (+1.6)	7.0 (+ .7)	7.1 (+1.0)	6.1	+ 9.6
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School Code Number	Type of Achievement Test	Grade Level	Mid-Percentile	Mid-Percentile	Mid-Percentile	Mid-Percentile	Mid-Percentile	Mid-Percentile	Base Grade Equiv.	SAI
45	STEP	Grade 4 Grade 5	61 68	56 77	92 99	88 95	87 96	77 87	NA NA	+ 3.2
Mean Grade Percentile by Subject Area		4.5	64.5	66.5	95.5	91.5	91.5	82.0	NA	+ 3.2
Mean SAI										+ 8.0

CAT - California Achievement Test
 NA - Not Applicable
 ND - No Data Available
 SAI - School Achievement Index
 SAT - Stanford Achievement Test
 STEP - Sequential Test of Educational Progress

TABLE I-5

INDEPENDENT SECONDARY SCHOOLS (STATE)

1970-1971 Standardized Achievement Test Scores by Subject Area,
School, Grade Level, Grade Equivalent, and Mid-Percentile

School Code Number	Type of Achievement Test	Grade Level	English Usage	Math Usage	Soc. Stud. Rdg.	Nat. Sci. Rdg.	Word Usage	National Percentile (Composite)	SIA
46	NEDT	Grade 9 Grade 10	81 77	91 91	85 81	84 80	84 80	86 87	+3.7
47	NEDT	Grade 9 Grade 10	72 74	64 64	76 75	73 78	80 82	76 79	+2.8
48	NEDT	Grade 9 Grade 10	59 75	74 86	66 77	71 86	66 81	70 83	+1.7
Mean Grade Percentile by Subject Area		9.5	73.0	78.3	76.6	78.6	78.8	80.1	+2.7

School Code Number	Type of Achievement Test	Grade Level	Reading Gr. Equiv. (Diff)	Language Gr. Equiv. (Diff)	Work Study Skills Gr. Equiv. (Diff)	Math Gr. Equiv. (Diff)	Composite Score Gr. Equiv. (Diff)	Base Grade Equiv.	SIA
49	ITBS	Grade 7 Grade 8	8.7 (+ .9) 10.0 (+1.2)	8.9 (+1.1) 9.8 (+1.0)	8.9 (+1.1) 10.1 (+1.3)	8.7 (+ .9) 9.7 (+ .9)	8.8 (+1.0) 9.8 (+1.0)	7.8 8.8	+10.0
50	SAT	Grade 8 Grade 9	6.5 (-1.7) 8.1 (-1.1)	NA NA	NA NA	6.7 (-1.5) 9.5 (+ .3)	6.6 (-1.6) 8.8 (- .4)	8.2 9.2	-10.0
Mean Grade Equiv. and Achievement by Subject Area		8.0	8.3 (- .1)	9.3 (+1.0)	9.5 (+1.2)	8.6 (+ .1)	8.5 (0.0)	8.5	0.0
Mean SAI									+1.6

NA - Not Applicable
 SAI - School Achievement Index
 NEDT - National Educational Development Test
 SAT - Stanford Achievement Test
 ITBS - Iowa Test of Basic Skills

SAI for the independent schools is +1.6 or one and six-tenths months above grade level equivalent. Although the SAI of +1.6 is not significantly above grade level equivalent, all schools except school #50 showed at least grade level equivalent achievement. School #50 showed an SAI of -10.0 or ten months below grade level equivalent, which indicates significant under-achievement.

The mean grade equivalent and percentile by subject areas show that the highest scores occurred in math, science, and word usage with mean percentiles of 78.3, 78.6, and 78.8 respectively. The lowest mean percentile score (73.0) was reported for English usage.

Two schools, #46 and #49, showed an SAI which is significantly above grade level equivalent. A cursory analysis of Table I-5 reveals that consistent and comparable data are not available for reporting. Due to the inconsistency of test scores resulting from the different types of achievement tests administered, the foregoing analysis of independent secondary schools had to be based primarily upon schools (#46, #47, and #48) that administered the National Educational Development Test.

Discussion of the data

The church-connected schools are well represented in this study in comparison to the independent schools. It should be pointed out at this time that only those non-public schools that agreed to participate by releasing test data were included in the collection, analysis and presentation of data discussed in the foregoing section. Although the sample of schools may not completely represent the non-public school parameter of the state of Hawaii, nearly fifty non-public schools that

participated provided an adequate picture of the present status of the non-public school endeavor throughout the state.

Notwithstanding the problems of representative sampling of church-connected and independent schools, the inconsistency and non-comparability of existing achievement data, and the host of other data limitations, the following observations are offered for further discussion and analysis.

- 1) Church-connected elementary schools on Oahu are achieving significantly higher than grade level equivalent.
- 2) Church-connected elementary schools on the Neighbor Islands are achieving significantly below grade level equivalent.
- 3) Church-connected secondary schools on Oahu are achieving at or slightly higher than grade level equivalent.
- 4) Church-connected secondary schools on the Neighbor Islands are achieving slightly below grade level equivalent.
- 5) Independent elementary schools, all from Oahu, are achieving significantly higher than grade level equivalent.
- 6) Independent secondary schools are achieving at or slightly above grade level equivalent.
- 7) Church-connected schools (elementary and secondary) achieve generally higher in the language arts and generally lower in mathematics and science.
- 8) Independent schools (elementary and secondary) achieve generally higher in mathematics and science and generally lower in language arts.

Measurement of Pupil Background Variables in Non-Public
Schools and Determination of Program Emphases

To promote public understanding of the meaning of test results, more than the scores themselves must be reported. Studies such as those of Burkhead¹² and the Office of Education's survey on "Equality of Educational Opportunity"¹³ have shown a significant relationship between pupil achievement and a host of pupil background variables. Affirming the generalities of these studies--that the economically poor are the academically poor, and that minority children achieve less well than majority children--is not sufficient. These may be realities, and the public should understand the extent to which they exist in local communities. More important, the public should be made to understand how the non-public schools treat such realities, what special programs are being implemented, and where.

As mentioned previously, the components of the proposed paradigm describe what "ought" to transpire. The time limitation of this study precluded any comprehensiveness in obtaining specific pupil background data. What was attempted was the collection of income data of parents of pupils attending the non-public schools. Again, due to limitation of time, only best estimates of annual income by schools were possible.

For the parochial schools, best estimates of annual income by schools were provided by the Catholic Diocese. For other church-connected schools, a standard estimate of 70 per cent of parents earning \$10,000 or more was determined. For all independent schools, a standard estimate of 90 per cent of parents earning \$10,000 or more was determined.

Program emphases data collection was not attempted for this study due to the limitation of time. However, situational factors or variables

of program emphases, i.e., ADA, percentage of temporary appointments of staff, percentage of part-time staff, mean years of teaching by instructional staff, pupil-teacher ratio and per-pupil costs were determined to provide some indication of program emphases via staff characteristics and basic financial emphasis data.

Models for Relationships Among Achievement, Pupil
Background Variables, and Program Emphases

To allocate resources intelligently, educators must know the probable effects of their resource allocation decisions. That is, they must know the probable relationships between the availability of resources and desired educational outcomes. Similarly, to make the right decisions on the modification of educational programs, the probable effects of these decisions must be known. Again, knowledge of a relationship between actions and achievement is implied. Finally, public understanding of achievement test results requires information on the relationship among achievement test scores, other characteristics of pupils, and the structure and content of programs operating in the non-public schools.

Knowledge of some of these relationships is scant, and decision-makers are forced to operate with significant uncertainties. However, through the paradigm proposed previously, the areas of uncertainty can be identified and perhaps researched. In making decisions, degrees of uncertainty can be treated as data and can be used to influence changes from the status quo.

Models of Relationships may come in many and varied forms. The most common are statistical models; which, even if simplistic, confuse almost all who try to unravel the many coefficients of correlations.

Although a statistical analysis is attempted here, for the purpose of public understanding, the "Common Characteristic Model" is hereby proposed.

Common Characteristic Model

The CCM (Common Characteristics Model) is a simplistic method of determining the relationship among achievement, pupil background variables, and program emphasis. The Common Characteristic Model presupposes correlations among the variables to some extent. The presupposition can be expressed as $Y=f(X)$, in that a given variable Y (dependent) is some unspecified function of another variable X (independent). The symbol f is used generally to express the fact that a functional relationship between Y and X exists, although the precise nature of the relationship is not stated. It is customary to speak of Y , the predicted variable, as the dependent variable because the prediction of it depends on the value of X and the known functional relationship, whereas X is spoken of as the independent variable. Many of the functional relationships found in statistics permit probabilistic and not exact prediction to occur. Such relationships may provide the most probable value of Y for any given value of X , but do not permit the making of perfect predictions.

The Common Characteristic Model encompasses both a statistical procedure and quantitative data analysis which is cursory in nature and which may be more conducive to public understanding.

The following tables are presented to effectuate a realistic analysis and presentation of the dependent variable by school in relation to the seven independent variables. These seven independent variables are as follows:

- 1) Per cent of parents with an annual income of \$10,000 or more.
- 2) Average daily attendance of non-public school.
- 3) Per cent of instructional staff on temporary appointment.
- 4) Per cent of instructional staff teaching part-time.
- 5) Mean (average) years of teaching by instructional staff.
- 6) Pupil-teacher ratio.
- 7) Per-pupil cost.

Table I-6 presents the data for 24 church-connected elementary schools on Oahu. The mean SAI, the dependent variable, was +4.7.

The means among the independent variables form the common characteristics of significantly achieving (SAI of +4.7) church-connected elementary schools on Oahu.

Table I-7 presents the data for church-connected elementary schools on the Neighbor Islands.

The Neighbor Island church-connect elementary schools are under-achieving significantly (SAI of -5.8) as opposed to the significantly achieving Oahu church-connected elementary schools.

Figure 2 depicts the significant difference in the dependent variable (SAI) between the Oahu schools and the Neighbor Island schools in relation to the significant differences in the independent variables.

Those independent variables which show a significant difference may be designated as the common characteristics for both the significant achieving and significant under-achieving church-connect elementary schools.

TABLE I-6

CHURCH-CONNECTED ELEMENTARY SCHOOLS ON OAHU BY SCHOOL
ACHIEVEMENT INDEX, INCOME BACKGROUND, STAFF
BACKGROUND, PUPIL-TEACHER RATIO, AND
PER-PUPIL COST, 1970-1971

School Code No.	School Achiev. Index	% Parents with income of \$10,000 or more	Av. Daily Attend.	% Staff on temp. appt.	% Staff on part time	Mean Yr. Tchg.	Pupil- Tchr. Ratio	Per- Pupil Cost (\$) *
1	+ 3.5	23	.9756	0	0	15.2	1:32	
2	+ 9.0	70	.9603	16.7	16.7	12.0	1:9	
3	+ 7.0	70	.9637	4.3	13.4	4.0	1:15	
4	+ 8.0	39	.9422	13.6	9.1	12.0	1:32	
5	+ 8.0	60	.9626	0	0	12.7	1:29	
6	+ 9.0	70	.9709	9.1	0	10.6	1:14	
7	0	.5	.0545	4.7	9.5	10.6	1:19	
8	+ 2.5	24	.9615	15.8	0	10.1	1:26	
9	- 9.0	77	.9393	0	0	11.5	1:10	
10	+ 4.5	20	.9584	7.1	14.3	9.6	1:19	
11	+ 4.0	25	.9599	20.0	5.0	12.9	1:43	
12	+ 8.0	30	.9600	15.0	5.0	7.3	1:24	
13	+ 6.5	43	.9597	17.6	0	10.3	1:35	
14	0	70	.9625	0	0	4.8	1:15	
15	- 4.0	67	.9489	23.1	23.1	5.1	1:50	
16	+ 5.0	80	.9541	9.5	57.1	5.3	1:19	
17	+20.0	70	.9386	40.5	0	12.0	1:14	
18	+17.5	70	.9563	22.2	0	12.6	1:19	
19	+ 4.0	30	.9610	44.4	0	9.3	1:38	
20	- 4.0	50	.9468	3.5	0	16.7	1:36	
21	0	5	.9658	10.0	0	14.3	1:35	
22	- 3.5	71	.9581	4.6	4.6	9.8	1:29	
23	+ 4.0	44	.9506	9.5	9.5	11.3	1:32	
24	+ 7.0	20	.9574	0	0	10.6	1:30	
$\bar{X}$	+ 4.7	47	.9570	12.0	6.9	10.4	1:26	\$306

*Per agreement with the schools who furnished data for the study, no per-pupil cost data would be displayed by schools.

TABLE I-7

CHURCH-CONNECTED ELEMENTARY SCHOOLS ON THE NEIGHBOR ISLANDS
BY SCHOOL ACHIEVEMENT INDEX, INCOME BACKGROUND, STAFF
BACKGROUND, PUPIL-TEACHER RATIO AND PER-PUPIL COST
1970-71

School Code No.	School Achiev. Index	% Parents with income of \$10,000 or more	Av. Daily Attend.	% Staff on temp. appt.	% Staff on part time	Mean Yr. Tchg.	Pupil- Tchr. Ratio	Per- Pupil Cost *
25	+ 3.0	34	.9535	44.4	0	15.6	1:35	
26	- 5.0	60	.9446	14.3	0	6.1	1:19	
27	- 7.0	10	.9480	40.0	20.0	21.2	1:18	
28	-12.0	10	.9556	0	0	3.0	1:18	
29	- 4.5	5	.9665	0	0	12.9	1:26	
30	- 3.5	15	.9542	0	0	17.4	1:26	
31	- 9.0	20	.9373	5.0	0	11.0	1:21	
32	- 5.0	39	.9543	8.3	8.3	14.2	1:22	
33	-10.	15	.9386	22.2	0	5.2	1:20	
$\bar{X}$	- 5.8	23	.9502	14.9	3.1	11.8	1:22	\$230

*Per agreement with the schools who furnished data for the study, no per-pupil cost data will be displayed by schools.

Table I-8 presents the data for church-connected secondary schools throughout the state. The mean SAI of +1.4 for the eight church-connected secondary schools is not significant, but nonetheless above grade level equivalent.

It is interesting to note that of the eight church-connected secondary schools reported in Table I-8, only one school (#34) shows an SAI which is significantly above grade equivalent (+4.1).

Church-Con. Elem. Schs.	SAI (months)	% Parents with income of \$10,000 or more	Av. Daily Attend.	% Staff on Temp. Appt.	% Staff on part Time	Mean Yr. Tchg.	Pupil- Tchr. Ratio	Per- Pupil Cost**
Oahu	+ 4.7	47	.9570	12.0	6.9	10.4	1:26	\$306
Neighbor Is.	- 5.8	23	.9502	14.9	3.1	11.8	1:22	230
Difference	10.5*	24*	.0068	2.9	3.8*	1.4	4	76*

*denotes significant difference

**Per agreement with the schools who furnished data for the study, no per-pupil cost data would be displayed by schools.

Figure 2.--Mean dependent and independent variables of church-connected elementary schools of Oahu and that of the Neighbor Islands.

Also of interest are the two Neighbor Island secondary schools which have an SAI of -.3 and -.5 respectively. When analyzing the independent variables of both the significantly achieving school and the two Neighbor Island under-achieving schools, marked differences may be noted in the following independent variables:

- 1) Per cent of parents with income of \$10,000 or more;
- 2) per cent of staff teaching part time; and
- 3) per-pupil cost.

The above independent variables which show significant differences between high SAI and low SAI elementary and secondary schools may possess a relatively high discriminating function.

Table I-9 presents the data for independent elementary schools on Oahu. The mean SAI of +8.0 for the four schools indicates significant

TABLE I-8

CHURCH-CONNECTED SECONDARY SCHOOLS OF THE STATE BY SCHOOL
ACHIEVEMENT INDEX, INCOME BACKGROUND, STAFF BACKGROUND,
PUPIL-TEACHER RATIO AND PER-PUPIL COST, 1970-71

School Code No.	School Achiev. Index	% Parents with income of \$10,000 or more	Av. Daily Attend.	% Staff on Temp. Appt.	% Staff on Part Time	Mean Yr. Tchg.	Pupil- Tchr. Ratio	Per- Pupil Cost (\$) *
34	+ 4.1	70	.9709	0	16.3	8.2	1:14	
35	+ 2.1	60	.9650	3.6	3.6	9.6	1:12	
36	+ .9	50	.9640	8.3	8.3	10.3	1:17	
37	+ 1.6	65	.97 3	3.4	12.1	8.6	1:17	
38	+ 2.2	75	.9655	0	11.8	6.9	1:14	
39	+ 1.2	55	.9677	0	17.6	14.0	1:29	
40	- .3	35	.9507	3.6	22.2	5.2	1:15	
41	- .5	68	.9643	23.5	5.9	12.1	1:15	
$\bar{X}$	+ 1.4	59	.9651	5.3	12.2	9.3	1.16	593

* Per agreement with the schools who furnished data for the study, no per-pupil cost data will be displayed by schools.

achievement above grade level equivalent.

It should be pointed out that all four independent elementary schools showed an SAI which is significantly above grade level equivalent. The SAI of +8.0 is almost equivalent to a whole grade level of achievement. The high SAI may be indicative of the independent variables which showed extreme favorability--annual income of parents, pupil-teacher ratio, and per-pupil cost.

TABLE I-9

INDEPENDENT ELEMENTARY SCHOOLS ON OAHU BY SCHOOL ACHIEVEMENT
INDEX, INCOME BACKGROUND, STAFF BACKGROUND, PUPIL-TEACHER
RATIO AND PER-PUPIL COST, 1970-71

School Code No.	School Achiev. Index	% Parents with income of \$10,000 or more	Av. Daily Attend.	% Staff on Temp. Appt.	% Staff on Part Time	Mean Yr. Tchg.	Pupil- Tchr. Ratio	Per- Pupil Cost*
42	+ 7.0	90	.9497	23.1	0	5.0	1:16	
43	+18.0	90	.9717	4.5	6.1	9.0	1:14	
44	+ 4.0	90	.9637	22.2	0	9.4	1:13	
45	+ 3.2	90	.9535	0	0	7.0	1:15	
$\bar{X}$	+ 8.0	90	.9596	12.4	1.5	7.6	1:14	\$949

*Per agreement with the schools who furnished data for the study, no per-pupil cost data will be displayed by schools.

Table I-10 presents the data for the independent secondary schools that participated in this study. The overall SAI of +1.6 may not be significant, but indicates achievement at or above grade level equivalent.

The extreme favorability of all independent variables noted in Table I-10 did not significantly affect the mean SAI of the five independent secondary schools. Although the mean SAI showed achievement above grade level equivalent, the achievement was not significant.

Characteristics of schools with a negative SAI

Of the fifty non-public schools that participated by releasing achievement test scores, fourteen, or 28 per cent, of the schools

TABLE I-10

INDEPENDENT SECONDARY SCHOOLS OF THE STATE BY SCHOOL
ACHIEVEMENT INDEX, INCOME BACKGROUND, STAFF
BACKGROUND, PUPIL-TEACHER RATIO AND
PER-PUPIL COST, 1970-71

School Code No.	School Achiev. Index	% Parents with income of \$10,000 or more	Av. Daily Attend.	% Staff on Temp. Appt.	% Staff on Part Time	Mean Yr. Tchg.	Pupil- Tchr. Ratio	Per- Pupil Cost*
46	+ 3.7	90	.9497	4.5	6.1	10.5	1:14	
47	+ 2.8	90	.9202	0	0	10.3	1:7	
48	+ 1.7	90	.9893	0	22.5	5.0	1:9	
49	+10.0	90	.9600	1.7	41.9	12.0	1:11	
50	-10.0	90	.9506	0	44.4	6.3	1:6	
$\bar{X}$	+ 1.6	90	.9539	.34	22.9	8.8	1:9	\$1262

*Per agreement with the schools who furnished data for the study, no per-pupil cost data will be displayed by schools.

showed a negative SAI. Of the fourteen schools with negative SAIs, thirteen schools were church-connected and one was independent. Geographically, ten of the fourteen schools were on the Neighbor Islands and four on the island of Oahu.

Figure 3 shows the variable means or characteristics of the fourteen schools with negative SAIs.

The means of the independent variables in Figure 3 may provide some insight in the common characteristics of under-achieving non-public schools.

Mean Negative SAI	% Parents \$10,000 +	ADA	% Staff With Temp. Appt.	% Staff Teaching Part Time	Mean Yr. Tchg.	Pupil- Tchr. Ratio
- 5.9*	40.0	.9499	8.3	6.8	10.5	1:21

*Denotes significant under-achievement.

Figure 3.--Variable means for fourteen non-public schools with negative SAIs.

Determining common characteristics by multiple correlation

Automatic computation of multiple correlation was executed by the Biomedical Computer Program, BMD0 3R. A multiple regression and correlation analysis of the data within each selection of sub-samples from the same population was performed. A selection may be any specified set of sub-samples. The multiple correlation coefficient R and R^2 was computed by this BMD0 3R program, using the following equations respectively:

$$R^2 = RS/D_{vv}, R = \sqrt{R^2}$$

The coefficients of multiple correlation between the dependent variable (SAI) and the seven independent variables 1) per cent of parents with an income of \$10,000+, 2) per cent of staff on temporary appointments, 4) per cent of staff teaching part time, 5) mean years of teaching, 6) pupil-teacher ratio, and 7) per-pupil cost, were computed in the following five sequences:

- 1) Multiple correlation of $Y(\text{SAI})$ to X^1 (per cent of parents with an income of \$10,000+), $X^2(\text{ADA})$, X^3 (per cent of staff

on temporary appoints), X^4 (per cent of staff teaching part-time), X^5 (mean years of teaching), X^6 (pupil-teacher ratio), and X^7 (per-pupil cost).

- 2) Multiple correlation of Y(SAI) to X^1 (per cent of parents with an income of \$10,000+), X^4 (per cent of staff teaching part-time), and X^7 (per-pupil cost).
- 3) Simple correlation of Y(SAI) to X^1 (per cent of parents with an income of \$10,000+).
- 4) Simple correlation of Y(SAI) to X^4 (per cent of staff teaching part-time).
- 5) Simple correlation of Y(SAI) to X^7 (per-pupil cost).

The BMD program output for the above sequences did not show any significant coefficient of determination (r) or multiple correlation coefficient (R^2). The following figure shows the coefficient of R and R^2 for each of the five sequences.

	R	R^2
Sequence 1 (Y to $X^1, X^2, X^3, X^4, X^5, X^6, X^7$)	.1660	.4074
Sequence 2 (Y to X^1, X^4, X^7)	.0015	.0384
Sequence 3 (Y to X^1)	.0004	.0202
Sequence 4 (Y to X^4)	.0012	.0345
Sequence 5 (Y to X^1)	.0002	.0154

Figure 4.--Coefficient of determination and multiple correlation coefficient by sequence.

The extremely low R and R^2 connote the non-relationship between the dependent variable (SAI) and the independent variables ($X^1, X^2, X^3, X^4, X^5, X^6$, and X^7). This non-relationship between the School Achievement

Index (SAI) and the various selected independent variables may be attributable to the indirect nature of these variables to pupil background and program emphases. Perhaps if the pupil background and program emphases variables were discrete, then some relationship (a higher R and R^2) may be realized.

One observed possibility of influence on the SAI may be that of geographical discrimination. Although the variable of geographical area is difficult to assess because it encompasses many other variables such as socio-economic background, ethnic composition, and educational background, the pattern noted between the Oahu and Neighbor Island SAI differences show definite characteristics. This may have far reaching implications for the non-public schools in the future.

Interpretation of Data on Achievement in Non-Public Schools

The interpretation and evaluation of data on achievement in non-public schools was attempted in the foregoing section. Notwithstanding the extreme limitations of achievement test data collection, the incomplete and inconsistent achievement test data, plus the severe time limitation of this study, this section purports to interpret and summarize the available achievement test data in terms of the present status. In addition, various indirect variables to pupil background and program emphases were evaluated with regard to the achievement index. The basic goals for achievement in non-public schools were also surveyed in a cursory manner in an attempt to rationalize and to coalesce the various components of the non-public educational endeavors.

The computed overall School Achievement Index (SAI) for the non-

public schools of Hawaii for 1970-1971 was +1.9. A total of fifty schools that participated in this study showed that the achievement on standardized test scores was one and nine-tenths months above grade level equivalent. Although an SAI of +1.9 is not significant*, the non-public schools are achieving at or above grade level equivalent.

Of the fifty non-public schools that participated in this study, 41 were church-connected schools and nine were independent schools. For the church-connected schools, the overall SAI was +1.8 while for the nine independent schools, the overall SAI was +4.5, denoting significant achievement above grade level equivalent.

When partitioning the total sample of the fifty non-public schools into geographic areas by Oahu and the Neighbor Islands, 38 schools are on Oahu and twelve schools are on the Neighbor Islands. While the Oahu non-public schools showed an overall SAI of +4.3, the Neighbor Island schools showed an overall SAI of -4.25, denoting significant achievement below grade level equivalent. Of the twelve Neighbor Island schools, ten schools showed negative SAIs and only two schools showed positive SAIs. One school was church-connected and the other was an independent school.

The various indirect independent variables of pupil background and program emphases seemed to show some relationship to the dependent variable (SAI), but the multiple correlation, R and R^2 , showed otherwise with very low coefficients of correlation. Although the low coefficients connote practically no relationship between the dependent variable (SAI) and the various indirect independent variables, dis-

*The significant number of months for achievement is +3.0 months while significant under-achievement is -3.0 months.

cernable patterns were noted. Three independent variables, namely: 1) per cent of parents with an income of \$10,000 or more; 2) per cent of staff teaching part-time; and 3) per-pupil cost, showed some discernable patterns of relationship which may be indicative of a discriminant function possessed by these variables relative to affecting the dependent variable (SAI).

A cursory survey of the basic goals for achievement in secular education in non-public schools generally centers around the following basic subject areas:

- 1) Reading and Language Arts
- 2) Mathematics
- 3) Science
- 4) Social Science

For the purpose of evaluating the value and quality of secular education in non-public schools via performance of non-public school students on national tests, the following table is presented.

TABLE I-11

MEAN SCHOOL ACHIEVEMENT INDEX (SAI) OF NON-PUBLIC SCHOOLS
OF HAWAII BY SUBJECT AREA, LEVEL, AND GEOGRAPHIC
AREA FOR SCHOOL YEAR 1970-71

Level	Geographic Area	Reading or Language Arts	Mathematics	Social Studies	Science
Elementary	State	+6.0*	+3.8*	+4.0*	+7.0*
	Oahu	+6.4*	+4.6*	+5.1*	+8.8*
	N. Is.	-5.6**	-3.8**	-5.6**	-6.9**
Secondary	State	+1.4	+1.1	+1.2	+1.2
	Oahu	+1.4	+1.7	+1.6	+1.7
	N. Is.	+1.4	+ .6	+ .9	+ .7

* Denotes significant achievement

** Denotes significant under-achievement

Table I-11 clearly shows that the non-public schools are achieving at or above grade level equivalent throughout the state. A discernable pattern of significant under-achievement is noted for the Neighbor Island elementary level of non-public schools. For the elementary level, the subject area of science showed the highest +SAI and mathematics showed the lowest -SAI.

The secondary non-public schools are achieving at or above grade level equivalent, but both achievement and under-achievement are not significant.

Overall, the value and quality of the non-public schools' secular education via performance of students on national tests of achievement is positive and significant at the elementary level and positive at the secondary level.

Summary and Concluding Statement

Summary

A paradigm to promote public understanding of test results was developed for the purpose of this study. Since this paradigm stresses what "ought" to be done in interpreting data on achievement in schools, it may serve as a model to others who may do work in similar areas of concern.

Since the seven components of the paradigm were utilized in chronological order in the analysis of the data, the summary will document the highlights of each component in similar order.

A. Basic Goals for Achievement in Non-Public Schools

A cursory review of the tasks and goals of secular education in non-public schools seems to indicate the following priority ranking:

- 1) Basic School Tasks:
 - a) Intellectual Dimension
 - b) Religious Dimension
 - c) Personal Dimension
 - d) Social Dimension
- 2) The basic goals for achievement center around the following basic subject areas:
 - a) Reading and Language Arts
 - b) Mathematics
 - c) Science
 - d) Social Studies

B. Measurable Standards for Achievement in Non-Public Schools

For the purposes of this study, grade equivalents were utilized since raw scores and other normative scores are not meaningful to the public. Grade equivalent scores were further transposed to the School Achievement Index, which served as the determinant of school achievement in academic areas. The SAI is an index score representing number of months above or below grade level equivalent.

C. Utility Function for Deviations from Achievement Standards

A utility function for deviations from standards is necessary to answer "how bad is bad" and "how good is good." For the purpose of this study, an SAI of +3.0 months or higher was designated as significant achievement and an SAI of -3.0 months or less was designated as significant under-achievement.

D. Collection and Analysis of Achievement Data in Non-Public Schools

Achievement data for non-public schools were collected and analyzed

by the following basic groupings:

- 1) Church-connected elementary schools on Oahu
- 2) Church-connected elementary schools on the Neighbor Islands
- 3) Church-connected secondary schools
- 4) Independent elementary schools
- 5) Independent secondary schools

The analysis of the data generated the following observations:

- a) Church-connected elementary schools on Oahu are achieving significantly higher than grade level equivalent.
- b) Church-connected elementary schools on the Neighbor Islands are achieving significantly below grade level equivalents.
- c) Church-connected secondary schools on Oahu are achieving at or slightly higher than grade level equivalent.
- d) Church-connected secondary schools on the Neighbor Islands are achieving slightly below grade level equivalent.
- e) Independent elementary schools, all on Oahu, are achieving significantly higher than grade level equivalent.
- f) Independent secondary schools are achieving at or slightly higher than grade level equivalent.
- g) Church-connected schools (elementary and secondary) are achieving generally higher in the language arts and generally lower in mathematics and science.
- h) Independent schools (elementary and secondary) are achieving generally higher in mathematics and science and generally lower in language arts.

E. Measurement of Pupil Background Variables in Non-Public Schools and Determination of Program Emphases

Indirect variables for pupil background and determination of program emphases for non-public schools were collected and analyzed with regard to the School Achievement Index (dependent variable). The seven independent variables selected for this study were as follows:

- 1) Per cent of parents with an annual income of \$10,000 or more
- 2) Average daily attendance
- 3) Per cent of instructional staff on temporary appointment
- 4) Per cent of instructional staff teaching part-time
- 5) Mean (average) years of teaching by instructional staff
- 6) Pupil-teacher ratio
- 7) Per-pupil cost

F. Models of Relationship among Achievement, Pupil Background Variables, and Program Emphases

The CCM (Common Characteristic Model), encompassing both a statistical procedure and quantitative data analysis, is cursory in nature and may be amenable to public understanding. The CCM is a simplistic method of determining the relationship among achievement, pupil background variables, and program emphases. The model presupposes correlations among the variables to some extent and may be expressed as $Y=f(x)$. The quantitative data analysis is simply an effective data layout procedure to promote a realistic analysis for the purpose of identifying the common characteristics of the various independent variables. The statistical procedure utilized to determine the relationship was the multiple correlation where the coefficient $R^2=RS/D_{VV}$ and $R=\sqrt{R^2}$.

The Common Characteristic Model supported the general observation regarding the common characteristics of under-achieving non-public schools. The observations are as follows:

- 1) 60 per cent of parents have an annual income below \$10,000.
- 2) The average daily attendance is 94 per cent of average daily membership.
- 3) Less than ten per cent of the educational staff has temporary appointments and part-time teaching schedules.
- 4) The average number of teaching years of the instructional staff is 10.5.
- 5) The pupil-teacher ratio is one to 21.
- 6) The per-pupil cost is \$385.

The Common Characteristic Model also showed significant differences between high SAI and low SAI elementary and secondary schools with regard to the following independent variables:

- 1) Per cent of parents with income of \$10,000 or more
- 2) Per cent of staff teaching part-time
- 3) Per-pupil cost

The above three independent variables seem to possess some relatively high discriminating function in relation to the dependent variable (SAI). However, the automatic computation of multiple correlation executed by the Biomedical Computer Program BMDO 3R, showed no significant coefficient of determination (R) or multiple correlation coefficient (R^2). Although no statistical significance was noted with regard to the relationship between the dependent variable (SAI) and the seven independent variables, an observed possibility of influence on the SAI may be that of geographical discrimination. Discernable patterns were noted between the

Oahu and the Neighbor Island SAI differences.

F. Interpretation of Data on Non-Public Schools

The non-public school achievement test data clearly show that 22 of the 37 non-public elementary schools that participated in this study are achieving at or above grade level equivalent. A discernable pattern of significant under-achievement is noted for the Neighbor Island elementary schools.

Ten of the 13 secondary non-public schools that participated in this study are achieving at or above grade level equivalent, but both the achievement and under-achievement are not significant.

Concluding Statement

Chapter I purports to satisfy the request for "evaluation of the value and quality of secular education in non-public schools, using where appropriate, existing data of the performance of non-public school students on national tests.."

The findings show that the value and quality of secular education in non-public schools via performance of non-public school students on national tests as a whole is positive and significant at the elementary level and positive at the secondary level with respect to grade equivalent scores.

In-depth comparison of performance of non-public school students on national tests with performance of public school students on national tests was not attempted for the following basic reasons:

- 1) The target populations differ drastically in that the non-public schools select their students, usually through standardized entrance testing.

- 2) The standardized achievement test batteries of the public and non-public schools are not comparable. The differences in the testing programs result from the differing goals, objectives, and program emphases between the public and non-public schools of the state.

Comparison of achievement test data between public and non-public schools will not yield valid observations and conclusions. Nonetheless, a cursory analysis was made; School Achievement Indexes (SAI) for public and non-public schools were compared. The only discernable pattern noted was the relative similarity in the pattern of achievement between the Oahu and Neighbor Island schools. Non-public schools showed similar relative differences in achievement between the Oahu and the Neighbor Island schools. The pattern of consistently lower SAIs on the Neighbor Islands may have far reaching implications for the future planning of both the non-public and public schools of Hawaii.

Inasmuch as the non-public and public schools show the same pattern of achievement, problems, and dilemmas, it behooves those in responsible positions not to view the educational endeavor as binary, either public or non-public, but to view it as unitary, encompassing both the public and non-public sectors.

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CHAPTER II

NON-PUBLIC SCHOOL TUITIONS AND COSTS

The second of five charges set forth in Senate Resolution 105 is to make projections under varying assumptions of the revenue and expenditures of non-public schools over the next decade with a view toward identifying expenditure-revenue gaps and those cases which are likely to result in school closures.

Projections of the future must be based, at least in part, upon the performance of the past. Therefore, efforts were made to gather cost and revenue data from each school in the study for the past five years. While a five-year base is not totally adequate for the requested projection, it is the only feasible data to request for a number of reasons:

- A) A majority of the schools included in the study did not have adequate data for a period longer than five years;
- B) Costs have risen more dramatically in the last five-or six-year period and are a better indicator of current conditions;
- C) Several schools indicated that it would be a major burden to retrieve data older than five years; and
- D) Participation in this study was voluntary, and it was suspected that request for data from further than five years back would have resulted in refusal of many of the schools to participate (a number of schools refused to participate

because of the five year-limitation).

Chapter II is divided into two sections. The first section presents data on revenue and expenditure trends over the last five years. The second section employs various assumptions to project these trends forward through 1980. For purposes of analysis, the schools are grouped into several categories; in each category the data from all the schools is averaged and both the mean and the extremes are reported.

In this chapter the financial data are not identified by school name, for that was one of the agreements which was made by the team members to the schools prior to the collection of the data.

Tuition and Other Revenue

Revenue as reported in this chapter is comprised of student tuition, fees which include monies for books and supplies when they are supplied by the school, gifts, and endowment income. Monies collected for school lunch, snack bars, and certain other minor money raising devices within the school (coke machines, etc.) are excluded except for any profits which were used to defray per-pupil expenditures.

Tuition

Tuition payments are the economic lifeblood of the non-public schools in the state. Among all the schools, an average of 83 per cent of the per-pupil expenditures are funded from the tuition and

fees of students. The range of percentage is from a high in some schools of 100 per cent of the cost from student tuitions and fees to a low of 15 per cent in one school.

In this chapter, the schools are categorized into five groups: independent secondary schools, church-connected high schools, boarding schools, church-connected elementary schools on A) Oahu, and on B) Neighbor Islands, and independent elementary schools. Independent secondary schools are those schools which have no direct church affiliation; church-connected high schools are as the name implies; and boarding schools are included as a separate category because of the cost differential which sets them apart. Among the church-connected elementary schools, there is a significant difference in tuition rates between those on Oahu and those on the Neighbor Islands, hence the two categories. Since all of the independent elementary schools in the study are located on Oahu, no division of this category was necessary.

The tuition data also includes the fees which the student must pay to attend these institutions. In some schools, fees represent a sizeable portion of the cost to parents. In one school, for example, the average fee per student is higher than the reported tuition rate.

In each category, the mean tuition and fees are reported as well as the lowest and highest rates within the particular category. Tuition data (which also includes the fee payments in this chapter) were gathered for the last five years. Some minor adjustments were

made to account for policies among individual schools such as family plans and/or tuition differentials between in-parish and out-of-parish families. The mean and range of tuitions are presented in Table II-1.

The average tuition rates for the independent secondary schools are influenced by one school which historically has charged a very low tuition. If that school were withdrawn from the calculations the average tuition rate would rise by approximately \$250 per year. The annualized rate of increase for the average tuition is 7.1 per cent, which is lower than several of the other categories. Each of the schools had cash reserves which could be used for operating expenditures four or five years ago. With one exception these have been either reduced or entirely depleted; thus expenditures will be more closely connected to tuition payments in the near future.

While the dollar cost of tuition and fees is considerably less for church-connected secondary schools, the rate of increase over the last five years has been greater than for the independent schools. One major factor which has influenced the differences in cost between the schools in these two categories has been the savings due to the contributed services of the religious personnel teaching in the church-connected schools. Since this pool of personnel has been decreasing, the rise in costs has accelerated.

The relatively small number of boarding schools in the state has the effect of accentuating the one school which has a very low tuition rate. This school is heavily endowed, and this fact accounts for the low tuition paid by the students. The median tuition among

TABLE II-1

LOW, AVERAGE AND HIGH TUITION AND FEE RATES AND
AVERAGE ANNUAL CHANGE BY CATEGORIES

CATEGORY	1966-67			1967-68			1968-69			1969-70			1970-71			AVE. ANN. CHANGE
	LOW	AVE.	HIGH	LOW	AVE.	HIGH	LOW	AVE.	HIGH	LOW	AVE.	HIGH	LOW	AVE.	HIGH	
Independent Sec. Schools	\$135	\$736*	\$945	\$135	\$866	\$1203	\$258	\$908	\$1245	\$308	\$974	\$1340	\$308	\$1039	\$1340	7.1%
Church-Connected Sec. Schools	135	341	650	170	360	600	240	413	700	280	466	700	357	532	750	9.3
Boarding Schools	300	1103	2060	352	1354	2460	528	1416	2460	628	1536	2475	628	1536	2475	6.8
Church-Connected Elem. Schools (Oahu)	39	152	500	44	155	500	75	174	550	93	217	650	114	242	725	9.8
Church-Connected Elem. Schools (Neighbor Is)	23	46	72	35	50	76	35	57	80	50	93	270	57	112	280	19.5
Independent Elem. Schools	182	454	725	182	477	790	258	589	850	308	673	970	308	687	970	8.6

*All figures rounded to the nearest dollar

the boarding schools shows the following figures for the last five years: 1966-67, \$1,050; 1967-68, \$1,250; 1968-69, \$1,250; 1969-70, \$1,500; and 1970-71, \$1,500. In this case, the median may be more representative than the average.

Church-connected elementary schools on Oahu exhibit the same tendencies as the high schools. Those Catholic schools with a large proportion of religious personnel as teachers have been able to charge relatively low tuition rates.

Tuition rates are also affected by the amount of money per-pupil which is contributed by the church that sponsors the school. The ultimate example of this effect is one school system which did not charge any tuition to members of its own church until two years ago. All the funding for this school came from the contributions of the members throughout the state.

The same trends are apparent for the church-connected schools on the Neighbor Islands. The average tuition is less than half the average of the schools on Oahu. The major increase in 1968-1970 is in part brought about by the addition of tuition rates by the school system described in the paragraph above.

There are a number of independent elementary schools in the state, but only a very small number of them chose to become involved in this study. Consequently the tuitions are not as accurate a reflection of the total population as are the other categories.

A comparison of tuition rates with national and regional averages

How do the average tuition rates for Hawaii's non-public schools

compare with those in the Western region of the United States? Selected data for these comparisons were drawn from two sources: the tuition fee report, 1970-1971, of the National Association of Independent Schools and the Report on U.S. Catholic Schools, 1970-1971, from the National Catholic Education Association.

TABLE II-2

SELECTED TUITION DATA ON NON-PUBLIC SCHOOLS IN THE WESTERN
REGION OF THE U.S. AND AVERAGE TUITION BY
CATEGORY FOR HAWAII SCHOOLS 1970-1971

WESTERN REGION DATA				HAWAII AVERAGE DATA		
TYPE	GRADE	RANGE	MED/AVE.	TYPE	RANGE	AVE.
Co-Ed Day School	9-12	950-1800	1300	Ind.Sec.Sch.	308-1340	1039
Catholic Day School	9-12	600-1975	1100			
Catholic Sec. Sch.	9-12	(average)	417	Church-Conn. Sec. Sch.	357-750	532
Catholic Elem. Sch.	1-6	(average)	111	Church-Conn. Elem. Sch.	114-725	242
Co-Ed Day School	1-3	675-1300	953			
Co-Ed Day School	1-6	675-1300	1103			
Boarding School	9-12	2000-3800	3200	Boarding Sch.	628-2475	1536

While no one-to-one comparison can be made because the categories are not exactly the same, it would appear that non-public schools in Hawaii compare favorably with those in the rest of the Western region. The church-connected schools on Oahu have higher average tuition than the Catholic schools in the table above. However, the Oahu schools

include several which are non-Catholic institutions and typically they have higher costs because there are fewer contributed services. The Neighbor Island schools, which reflect a higher proportion of Catholic schools, compare more accurately with the Western region average.

Per-Pupil Cost Data

Identification of the operating expenditures among the non-public schools was also requested in the second mandate of Senate Resolution 105. As has been pointed out previously, it was necessary to categorize expenditures in a manner which would facilitate comparison among the several classifications into which the schools in the study were placed.

The concept of per-pupil cost as a framework for securing comparisons within schools, between schools in a system, and between various educational systems is universally accepted in the United States. It is based upon an accurate categorization of the costs which are attributable to the daily operation of the schools in educating a child. The categories of expenditures used to determine per-pupil cost are: 100 Administration, 200 Instruction, 300 Attendance Services, 400 Health Service, 500 Pupil Transportation, 600 Operation of Plant, 700 Maintenance of Plant, and 800 Fixed Charges. Per-pupil cost does not include net costs of such services as the cafeteria, book store, capital outlay, or debt retirement.

A question might be raised as to whether capital costs and debt service should not be included since they are in some private

schools a cost to the parent. If this were done, no valid comparison between schools or between systems could be made, for some schools have no debt structure while a few others are heavily indebted. It might be noted that several of the private schools use outside fund-raising activities to support new buildings and other capital costs.

The data are reported using the same categories as were used to report the tuition data. The average per-pupil cost and the highest and lowest cost are reported for each year beginning in 1966-1967.

The average per-pupil costs of the independent schools rose at the lowest annualized rate of 5.9 per cent. It might be well to again note that each of the schools in that category reported substantial cash reserves from operations in 1967-1968. However, by 1970-1971, these reserves had been depleted so that current tuitions and other income sources will have to carry the load for per-pupil cost increases in the future.

Per-pupil costs in the church-connected secondary schools increased by 80 per cent in five years. This increase is a product of a number of conditions. Much of the percentage gain is due to the fact that since 1966-1967 there have been progressively fewer teachers from religious orders. Replacing these religious teachers with lay teachers may triple the cost per-teacher. In 1970-1971, less than one-half of the teachers in Catholic secondary schools were religious personnel. In addition, all of the schools report increasing the scope of the curricula and a reduction in pupil-teacher ratios. Salaries of the teachers in religious schools too

TABLE II-3

LOW, AVERAGE AND HIGH PER-PUPIL COSTS FROM
1966-1967 THROUGH 1970-1971

CATEGORY	1966-67		1967-68		1968-69		1969-70		1970-71		AVE. ANN. CHANGE					
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH						
Independent Sec. Schools	933	949	971	933	1106	1358	922	1051	1096	1039	1130	1222	1232	1262	1312	5.9%
Church-Connected Sec. Schools	186	327	591	208	355	641	269	409	753	328	514	814	367	587	1001	12.4
Boarding Schools	1363	1842	2381	1452	2068	2643	1606	2213	2999	1823	2607	3494	1972	2818	4307	8.9 %
Church-Connected Elem. Schools (Oahu)	60	159	603	68	170	630	90	202	712	112	254	752	113	306	776	13.9
Church-Connected Elem. Schools (Neighbor Is.)	43	107	362	49	121	349	60	177	532	133	200	463	147	230	547	16.5
Independent Elem. Schools	N.A.				N.A.		629	736	1069	676	874	1139	700	949	1200	8.8

have come more into line with those paid to faculties in the public schools.

Boarding school average costs have risen 53 per cent during the five-year period, while the school with the lowest cost experienced a 45 per cent increase, considerably higher than the increase of one-third among independent secondary schools and a good deal less than church-connected schools cited above. Another notable feature is the extreme differences between the lowest and highest per-pupil cost, more than \$2300 per-pupil.

Per-pupil costs for the church-connected elementary schools on Oahu have increased by 92 per cent in the last five years. The Catholic schools tend to be the lowest among the schools in this class, partly because of the contributed services of the religious teachers. In 1970-1971, an estimate of the value of the contributed services was made in the diocese. Using the per-pupil cost with contributed services included makes a major change in the average cost; the low would be \$292, the average \$350 and the high does not change. An earlier study of Catholic parochial schools in Hawaii carried out by members of the present research team disclosed an annual decline of six per cent in the net numbers of religious available to teach in the schools. The trend was calculated to continue for at least five more years; thus there will probably be at least one-third less religious available by 1976, which will mean a corresponding increase in costs.

Church-connected schools on the Neighbor Islands exhibit the largest percentage rise in per-pupil costs. The same phenomena

relative to contributed costs exists. The per-pupil average rises to \$387 when the contributed services are calculated.

Data from the independent elementary schools was incomplete for 1966-1967 and 1967-1968. Certain schools were not in operation during those years, and if the data from the balance of the schools is used, the results are skewed so that they have little meaning; therefore only the last three years are reported.

One method of determining the importance of the changes in per-pupil costs is by comparison with public school districts. The Department of Education calculates per-pupil costs both on average daily attendance and average enrollment, the second of which will be used for purposes of comparison. The 1970-1971 per-pupil costs had not been calculated at the time this study was being done; therefore four years of per-pupil costs, 1966-1967 through 1969-1970 were used.

The four-year change expressed in per cent of change and the annual change rate for the Department of Education is arrayed along with the comparable data for the groups in the study.

TABLE II-4

COMPARISON OF RATES OF CHANGE IN PER-PUPIL COSTS
FOR YEARS 1966-1967 THROUGH 1969-1970

	D.O.E.	IND. SEC. SCHOOLS	CHURCH-CON. SEC. SCH.	CHURCH-CON. ELEM. SCH.	NEIGHBOR IS. ELEM. SCH.
Change in per cent 1966-67 thru 1969-70	37	19	57	60	86
Annual change rate for four years	8.6	4.4	11.9	12.5	16.8

An additional analysis may be made by comparing the expenditure rates for all public elementary and secondary schools in the United States with the non-public schools in Hawaii. The five year change (1966-1967 through 1970-1971) has been 57 per cent, with an annual growth rate of 10.6 per cent, a low rate of 8.6 per cent in 1966-1967, and a high rate of 12.5 per cent in 1969-1970. Thus the non-public schools in Hawaii do not present a picture which is extremely different than the rate of increase in U.S. public schools. The major rise in the non-public sector has been among the church-connected schools. The reasons for this rapid increase have been discussed previously.

Per-pupil cost, tuition ratio

One way to begin to identify possible financial problems in the various schools is to compare per-pupil costs with the tuition rates. Clearly this is not a "fool proof" method since there are a number of factors that intervene to preclude a one-to-one relationship between a low tuition, high per-pupil cost school being one which is the most likely candidate for closure. For example, one school in the study is particularly well endowed, and tuition is not a major revenue source; therefore it is classified as one of the schools in which per-pupil costs are more than 100 per cent higher than tuition. However this school is not in danger of closing. Certain church-connected schools have a policy of paying more than one-half the cost of the schools through contributions by the members of the parish. While at present these schools appear to be capable of remaining open, one may choose to raise questions about long term commitments when per-pupil costs

for that category are rising at an annual rate of 14 per cent.

The cost tuition ratio data are arrayed in percentage bands based upon 1970-1971 cost/tuition relationship.

TABLE II-5

COST TUITION RATIO DATA FOR 1970-1971

	PER-PUPIL COSTS HIGHER THAN TUITION				BREAK EVEN	PER-PUPIL COSTS LOWER THAN TUITION	
	Above 100%	51-100%	26-50%	11-25%	10% or Less	Up to 11%	Above 25%
Elem. Sch. %	7 20%	4 11%	7 20%	7 20%	5 14%	3 9%	2 6%
High Sch.* %	1 8%	0 0%	2 12%	3 20%	5 33%	4 27%	
*Includes K-12 schools							

Of the eleven elementary schools which exhibit per-pupil costs above 50 per cent higher than tuition rates, seven schools appear to be in danger of closing within the next three years. The figure of seven schools is an estimation based upon enrollment, size of the parish (all are church-connected schools), buildings, etc., as well as the financial problems.

The high schools present a somewhat brighter picture. The school in which the cost is above 100 per cent of the tuition has been described above and is in no danger of closing. The two schools in the 26-50 per cent bracket appear to be potential candidates for closure based upon declining enrollment, rapidly rising per-pupil

costs, debt structure, etc. The 26-50 per cent bracket was chosen for high schools because of the propensity for those schools to pay their way from tuition. The proof of that statement is demonstrated by the fact that nine of those schools cluster around the break-even point. The ability of the independent schools and church-connected secondary schools to maintain their enrollments as tuition has risen is another indication that the schools which are not able to pay their own way may be in difficulty.

Relationship between the rise in tuition and enrollment

Historically the population of Hawaii has demonstrated a strong desire for private school education. Non-public schools have played a prominent part in the educational history of the state, beginning as early as 1831 when Lahainaluna was established by Christian missionaries for the purpose of training teachers to assist the educational work.

The missionaries continued to establish non-public schools which were actually semi-public schools since at various times during the monarchy government money was used to assist in their support. The independent schools tended to supplement the "common schools" and they offered what might be called the "secondary studies" through most of the nineteenth and early twentieth century. While there were several private or independent schools such as Punahou, Iolani, St. Louis, Mid Pacific Institute and Kamehameha which were involved in such advanced training, there was only one public high school in the state as late as 1920.

The largest number of non-public schools in Hawaii today, the Catholic schools, began in 1859 when Sacred Hearts Academy was founded. The first parochial Catholic school was established on the island of Maui in 1884. Both the private and parochial Catholic schools grew steadily until they reached a peak enrollment of 17,150 students in 1965.

The diversity of Hawaii's past educational needs was so great that it was not until well after annexation that the nineteenth century American ideal of a public school system attended in common by all children was given governmental endorsement.

By 1840 a government school system had been created in the tiny island kingdom but it was decidedly not a system modeled after the ideas of Horace Mann, the chief formulator of the American common school idea. Only after the Federal Bureau of Education published the results of its survey of education in Hawaii in 1920 did "common school" come to mean what Mann and other public school founders had intended. Even at that a quasi-public English Standard school system continued under full governmental support, to operate until 1960 when the last English Standard class graduated from Roosevelt High School.

Hawaii's rich cultural, religious and linguistic history produced a great diversity of schools. It is pointless to argue which schools, private or public, elementary or secondary, standard or non-standard, contributed most to the creation of community among Hawaii's people, linguistically, politically or culturally. But all schools, in general, have had as their central mission, historically, the eventual creation of commonality, however different their resources

and clientele, their belief in a community well ordered and the timetable for such an achievement.

Obviously this pattern of support and growth is a testimony to a desire for non-public school education. In terms of looking for potential problems which face non-public schools, one measure of desire is the enrollment performance during the last five years. How have enrollments fared during times of rapidly increasing tuition rates and costs? One might hypothesize that if enrollments remain constant or increase, this is *prima facie* evidence that a maximum in terms of desire has not yet been reached. On the other hand, the reverse of this logic may not be true. That is, a decline in the enrollment may not necessarily mean the desire is lessening, but instead may reflect deliberate efforts by schools to reduce large pupil-teacher ratios or even be a reflection on overall decline in the student population for that category of school throughout the state.

The data in Table II-6 includes the per cent of increase in tuition by school category, the 1966-1967, 1970-1971 enrollments for the schools in the study, and the five-year increase or decrease expressed in per cent.

The independent elementary and secondary schools have raised tuition rates 41 per cent during the five-year period and during the same years their enrollment increased by 15 per cent. Likewise an increase of 56 per cent in church-connected secondary schools has been accompanied by a 3.9 per cent rise in enrollments. Thus in both groups of schools the peak in terms of demand has not been reached. It is clear that parents are willing to pay the present fees to have their

TABLE II-6

FIVE YEAR PERCENTAGE CHANGE IN TUITION, ENROLLMENT CHANGES AND
PER CENT OF CHANGE IN THE FIVE YEAR PERIOD

	INDEPENDENT SCHOOLS	CHURCH-CON. SEC. SCHS.	CHURCH-CON. ELE. SCHOOLS (OAHU)	CHURCH-CON. ELE. SCHS. (NGH.IS.)
Five Year Average Change in Tuition	736 (66-67) 1039 (70-71)	341 (66-67) 532 (70-71)	152 (66-67) 242 (70-71)	46 (66-67) 112 (70-71)
Per Cent of Change	41%	56%	59%	143%
1966-67 Enrollment	4345	4439	9225	2990
1970-71 Enrollment	5004	4579	8185	2159
Per Cent of Change	+15.2%	+3.9%	-11.2%	-27.7%

children attend non-public secondary church-connected schools and independent schools. The point at which the tuition will adversely affect demand is impossible to predict, but it has not been reached at the present time.

Church-connected non-public school enrollments have declined as tuition has risen. As has been pointed out above, this may or may not be a function of the rising costs to the parents. Other factors such as deliberate attempts to reduce the pupil-teacher ratios in certain schools, reduction in the number of elementary school children due to a net out migration in certain areas of the state may contribute to the enrollment decline. However, it is not unreasonable to suspect that a decline in enrollment of 28 per cent in five years is a reflection of a change in the level of desire of the parents for non-public school education.

A non-statistical and highly subjective measure of the desire for non-public education is the waiting lists and refused applications of the schools to fill their projected vacancies. Only two secondary schools, including both the independent schools and the church-connected schools, reported no waiting lists in the fall of 1971. Several of the larger schools also reported that they ultimately accept well less than one-half of the children who take the admission examinations.

Among the church-connected elementary schools, a somewhat different pattern exists. Approximately one-half of the schools reported that they have a waiting list for pupils. However, only five schools indicated a waiting list for students in the first three grades.

To summarize, it appears that parents are willing to pay the present tuition costs to send their children to non-public secondary schools. Only two schools appear to be in near term jeopardy because of falling enrollments and a rising cost structure.

Elementary schools, particularly church-connected schools, exhibit a somewhat different pattern; enrollment is declining while tuition costs rise. Among the church-connected schools, approximately 70 per cent of the operating costs are paid by tuition and fees; therefore continued decline in enrollment, which is connected to the desire for non-public school education, coupled with rising costs, has potentially serious consequences for several of the schools.

Gifts, endowments and other income

While student tuition is the major source of income for the non-public schools, the revenues obtained from gifts and endowments may be the difference between success and failure for these institutions. Comparative reporting of this income has certain problems. Gifts and endowments may be restricted in terms of the expenditure categories in which the money may be used. For example, some schools have a special building fund, others a site fund, and still others a scholarship fund, while a number of schools in the study do not break down the type of gift income in their accounting procedures. Since it had been agreed that financial data would not be identified by schools, the only feasible method of presenting these data appeared to be to report the impact of gifts and endowment as a percentage of a school's operating costs.

Table II-7 presents the gift and endowment income in terms of what this amount bears to the per-pupil cost by schools.

The schools in the study have two choices in the future. Either they can slowly change the ratio of gift income (which for the church connected schools includes the parish and/or diocesan subsidies as well as fund raising efforts such as carnivals, etc.) so that it bears a larger percentage of per-pupil costs, or they can raise tuition. This is a particularly important decision in times of high unemployment and decreasing profit margins, such as 1971 has been.

Capital improvements

Each school was requested to project its capital improvement

TABLE II-7

GIFT INCOME AND ENDOWMENT INCOME EXPRESSED AS A PER CENT OF
OPERATING COSTS FOR 1970-1971 AND 1969-1970

SCHOOL CATEGORY	PER CENT OF OPERATING COST (1970-1971)					
	0-5%	6-15%	16-30%	31-50%	51-75%	76-100%
Independent Sec. Sch. (Including Boarding Schools)	1	4	1			1
Church-Connected Sch.	4	1	1	2		
Church-Connected Elem. Schools (Oahu)	7	8	4		4	
Church-Connected Elem. Schools (Neighbor Is.)			2	2	6	
Independent Elem. Sch.	3	(Other Elementary Schools are reported as part of the Independent Secondary Schools.)				
(1969-1970)						
Ind. Sec. Sch.	1	4	1			1
Church-Connected Sch.	4	1	2	1		
Church-Cn. El.(Oahu)	7	7	5		4	
Church-Cn. El.(N.Is.)			2	2	6	

plans for the next five years. Among the church-connected elementary schools, only one school reported that a major addition or new building was now being planned, and that at a cost of less than \$300,000. Three church-connected secondary schools are planning for new buildings. One school reported its plans to be in excess of two million dollars, while the other two were near the \$500,000 mark. Two schools have recently

completed buildings and are still paying them off.

All of the independent schools in the study reported that either additional facilities are being planned or that the school is presently paying off recently constructed or purchased buildings. In every case the plans are to construct the facilities with money raised by fund drives or outside sources, and it is not planned to have the students bear the cost through their tuition payments.

No generalization can be made about the capital outlay for equipment in the schools. The reported expenditures in 1970-1971 range from fifty cents per-student up to \$60 per-student. There is little uniformity of expenditure even within categories of schools. Also, there is no discernible pattern of spending year-by-year. Some schools may spend twice as much in one year as they do in the next year for equipment.

Groups such as parent-teacher organizations raise much of the money used to purchase major items of equipment in the church-connected schools. Direct contributions of equipment, particularly television sets, are also common in these schools.

The effect of inflation

The effect of inflation on the rise in costs for the non-public schools may be observed by calculating the costs in constant 1966 dollars. Table II-8 lists the actual costs for selected years and the non-inflation costs for various categories of non-public schools in the study.

If the national policies on control of price and wage inflation

TABLE II-8

ACTUAL AVERAGE PER-PUPIL COSTS AND COSTS
CALCULATED IN 1966 CONSTANT DOLLARS

YEAR	INDEPENDENT SCHOOLS		CHURCH-CONNECTED SEC. SCHOOLS		CHURCH-CONNECTED ELEM. SCHOOLS (OAHU)	
	ACTUAL	CONSTANT	ACTUAL	CONSTANT	ACTUAL	CONSTANT
1966-67	\$ 949	\$ 949	\$ 327	\$ 327	\$ 159	\$ 159
1968-69	1051	963	409	375	202	185
1970-71	1262	1061	587	493	306	257
Per Cent Change 5 Years	33%	12%	80%	51%	92%	61%

are successful in the change in the cost of living at or near the stated guidelines, the long term effect on per-pupil costs is obvious. A projection based partly upon the assumption that there will be a decreasing rate of inflation over the next several years is presented in the next section of this chapter.

Projections of Future Costs

Senate Resolution 105 requested projections of future costs under varying assumptions over the next decade, with a view toward identifying expenditure-revenue gaps and those cases which are likely to result in school closure. The original plan for projecting costs in this study was to attempt to create a multi-variable model which could be used to simulate the operation of the various categories of non-public schools. By manipulation of the variables, costs could have been projected under several assumptions, e.g., varying annual

salary increments, varying teacher turnover rates, etc. Two factors interfered with this plan: first, a short lead time. The University authorization to begin the study was not given until the last days of July. Second, and far more damaging, was the Executive freeze on hiring which prevented the securing of necessary skilled manpower to create and test such a model.

Since the above plan was impossible to implement, alternate assumptions were created. Per-pupil cost data were used and projections were made based upon a single variable.

Cost projections for non-public schools are at best an inexact science; in fact "guesstimates" might be a more appropriate term. A large number of variables tend to intervene, and the ability of the individual schools to manipulate these variables precludes detailed prediction. For example, one method of altering the cost curve in a private school is to increase the pupil-teacher ratio by admitting more children to the school. However, after a certain point, the larger classes appear to have a detrimental effect upon the quality of instruction; thus while short term ends might be accomplished, the long term reputation of the school might suffer. Also, while this alternative is available to the secondary schools, it does not appear to be open to the church-connected elementary schools where the waiting lists are smaller or non-existent.

The major variables which affect cost would include such items as salary policy, policy on retention of qualified teachers, availability of teachers from the religious orders, the type and range of supportive services rendered, etc. The manner in which the non-public

schools determine their policy decisions on these variables will have an effect on projections.

Projections based upon three sets of assumptions are presented in this section. One projection is based upon the linear annual increase in per-pupil expenditures over the last five years. The second employs a regression technique using the projected per-capita income for the state through 1980 and bases the growth in per-pupil costs around the income projections. A third assumption is that per-pupil costs will tend to increase at a decreasing rate during this decade, and that the expenditure curve will flatten.

This relatively small data base is a hazard in attempting to establish trends for projections purposes. Generally speaking, the greater the number of data points as well as the greater the number of variables included will have the affect of making technically better projections of future trends. The studies of educational finance have tended to demonstrate that the best single variable for projecting purposes is per-pupil cost, since this statistic includes the major cost items for schools. Therefore, using per-pupil costs appears to be defensible in light of the restraints previously cited.

In relation to the small number of data points, little could be done to remedy this fault. The data availability precluded gathering cost information from further back than five years. A study was done for the Honolulu Diocese last year, and the data sources beyond five years were either non-existent or of such poor quality as to be nearly useless. Several of the other schools in

the study also reported that supplying cost data from further than five years back would be impossible for a variety of reasons. Parenthetically one might add that several of the independent elementary schools indicated their reasons for refusal to become involved in this study was their inability, or lack of desire, to recreate their school cost data.

Assumption One

The first assumption is based upon a linear projection of the annual rate of increase calculated over the last five years. Projections for the average of all schools in a given category are presented as well as the projection for the school with the lowest and highest reported per-pupil cost. The increases are presented for each year through 1975-1976, then the 1977-1978 and 1980 figures.

The projected per-pupil costs using a linear projection based upon the annual percentage change rate becomes extremely high by 1980. This set of projections may be considered the upper limit along a continuum of possible cost projections in this decade. Obviously the error factor is extremely great and tends to be compounded year-by-year.

This form of linear projection assumes that the average enrollments in the schools will remain as they now are, and costs will tend to rise uniformly. An assumption such as this tends to be substantiated if one chooses to base his evidence on the total group of schools in the study. However, enrollment in two of the categories has decreased significantly; therefore, a one-to-one ratio does not exist

TABLE II-9

PROJECTED PER-PUPIL COSTS BY SCHOOL CATEGORIES FOR
SELECTED YEARS THROUGH 1980-ASSUMPTION ONE

Year	Ind. Sec. Schools			Church-Con. Sec. Schools			Boarding Schools			Church-Con. El. Schools (Oahu)			Church-Con. El. Schools (N.Is.)		
	L	A	H	L	A	H	L	A	H	L	A	H	L	A	H
1971-72	1302	1336	1393	413	660		2141	3069	4850	146	397	859	77	185	655
1972-73	1376	1415	1480	472	742		2326	3342	5461	166	452	903	98	216	711
1973-74	1455	1499	1471	539	834		2526	3639	6149	188	515	950	126	251	772
1974-75	1538	1587	1669	616	937		2743	3963	6924	214	578	1000	161	293	839
1975-76	1625	1681	1772	703	1053		2979	4316	7796	243	668	1051	206	341	911
1977-78	1816	1885	1999	917	1330		3815	5574	10130	313	867	1164	338	463	1074
1980-	2144	2239	2394	1366	1889		4500	6610	11000	355	987	1225	708	732	1376

in terms of changes in enrollment and the decline in per-pupil cost. In fact, an opposite trend tends to occur until an enrollment point is reached where classes can be consolidated. For example, a double grade school with a 34 to one teacher-pupil ratio would have to lose approximately fourteen students per-class before any consolidation could occur. Thus, until the decrease was great enough to warrant placing classes together, the per-pupil cost per-year would actually rise rather than decrease.

Assumption Two

The second set of projections was based upon a statistical procedure which attempts to estimate the change in one variable by

correlating it to the growth of another. Several variables were tested and per-capita income was found to be closely correlated with and a significant variable in the determination of per-pupil costs. Regression analysis was used to project the change in per-pupil cost through 1980, employing per-capita cost as an independent variable.

The data are arrayed by category for selected years in Table II-10.

TABLE II-10

PROJECTED PER-PUPIL COSTS BY SCHOOL CATEGORIES FOR
SELECTED YEARS THROUGH 1980-ASSUMPTION TWO

Year	Ind. Sec. Schools			Church-Con. Sec. Schools			Boarding Schools			Church-Con. El. Schools (Oahu)			Church-Con. El. Schools (N.Is.)		
	L	A	H	L	A	H	L	A	H	L	A	H	L	A	H
1971-72	1237	1291	1351	409	643	1054	2139	3054	4550	131	332	834	175	264	588
1972-73	1304	1357	1407	457	713	1155	2313	3306	5030	146	371	881	205	297	636
1973-74	1386	1426	1467	508	786	1262	2497	3575	5539	163	412	931	237	332	686
1974-75	1466	1499	1530	562	865	1375	2692	3861	6079	180	456	984	271	369	740
1975-76	1552	1576	1596	618	948	1494	2898	4161	6646	198	502	1040	307	408	796
1977-78	1738	1745	1741	743	1128	1754	3347	4819	7897	237	602	1163	386	493	919
1980-	2061	2038	1992	957	1440	2005	4164	5957	8800	305	776	1325	522	641	1132

A comparison of the data in Table II-9 and the table above will give the reader a sense of the difference between the first and second assumptions. Under Assumption One, in all categories of schools the 1980 costs are more than double the 1970 costs, while the ten year rise under Assumption Two runs from a low average increase of 58 per cent

in the independent schools to a high average of 133 per cent in the church-connected elementary schools on Oahu. During the same time period, the per capita income is projected to rise from \$4,111 to \$7,293. This estimate is the most conservative of several which have been made relative to change in per capita income in the state of Hawaii. The projection clearly indicates the largest net change is among the church-related schools. This reflects the conditions which have been commented upon previously.

Assumption Three

Projections made under the third assumption were based upon a hypothesis that per-pupil costs will tend to rise at a reduced rate over the next ten years. This assumption is based upon a number of trends which may or may not be valid: A) Efforts to control inflation will be effective over the long term; B) Teacher turnover rate in 1970-1971 is lower than in previous years. If this trend continues, salaries will tend to become stabilized as more teachers reach the maximum rates of pay; C) Teacher surpluses will have the effect of slowing the upward rise in salary schedules; and D) Greater productivity through educational technology also may affect per-pupil costs.

A comparison of public school expenditures reveals that in 1970-1971, a year with the highest rate of inflation during the last ten years, the rate of growth in expenditure declined from 12.5 per cent in 1969-1970 to an estimated 9.7 per cent in 1970-1971. During the 1960's the national per-pupil expenditure has been increasing at an annual rate of 4.7 per cent faster than the growth in the Gross

National Product. Last year the rate of increase dropped to 4.0 per cent. If these trends continue, the projections based upon Assumption Three, which are presented in Table II-11, may be quite realistic.

TABLE II-11

PROJECTED PER-PUPIL COSTS BY SCHOOL CATEGORIES FOR
SELECTED YEARS THROUGH 1980-ASSUMPTION THREE

Year	Ind. Sec. Schools			Church-Con. Sec. Schools			Boarding Schools			Church-Con. El. Schools (Oahu)			Church-Con. El. Schools (N.Is.)		
	L	A	H	L	A	H	L	A	H	L	A	H	L	A	H
1971-72	1237	1291	1351	409	643	1054	2139	3052	4550	131	332	834	175	264	688
1972-73	1299	1347	1399	450	702	1140	2287	3268	4957	144	365	874	200	292	629
1973-74	1356	1399	1444	488	732	1221	2426	3471	5342	156	396	912	224	319	666
1974-75	1410	1447	1485	524	810	1295	2555	3660	5699	167	425	947	247	343	702
1975-76	1458	1491	1523	556	857	1363	2672	3831	6023	177	451	979	268	365	734
1977-78	1545	1571	1592	615	942	1486	2884	4141	6609	196	499	1037	305	405	792
1980-	1688	1699	1701	709	1079	1683	3225	4641	7556	226	575	1130	364	470	886

A comparison of changes in per-pupil costs in Table II-11 with those in the other two cost projection tables reveals why Assumption Three must be considered to be the most conservative of the three. The per-pupil cost rises at a decreasing rate, and in no case does the cost double by 1980.

Three sets of assumptions have been employed to develop three projections along what was conceived as a continuum of possible projections. Undoubtedly none of the above will give a completely accurate description of per-pupil costs in 1980; however, they do provide decision-

makers with information from which policy alternatives may be chosen.

Cost to parents

Tuition and fee costs were projected using the same set of assumptions as were used to calculate per-pupil costs. An abbreviated table showing the projected tuition and fees for selected years is included for illustrative purposes.

TABLE II-12

PROJECTED TUITION AND COSTS FOR SELECTED YEARS BASED UPON THE
THREE ASSUMPTIONS USED IN CALCULATION OF PER-PUPIL COST

ASSUMPTION ONE

Year	Ind. Sec. Schools			Church-Con. Sec. Schools			Boarding Schools			Church-Con. El. Schools (Oahu)			Church-Con. El. Schools (N.Is.)		
	L	A	H	L	A	H	L	A	H	L	A	H	L	A	H
1971-72	363	1113	1508	448	581	897	728	1640	2567	141	266	781	68	134	367
1975-76	702	1464	2415	992	830	1111	1313	2134	2968	334	386	1051	141	273	825
1970-	1598	2063	3868	2197	1184	1367	2370	2777	3432	790	616	1413	350	665	1250

ASSUMPTION TWO

1971-72	401	1114	1484	409	566	842	762	1696	2623	136	261	767	65	125	342
1975-76	636	1427	1886	661	783	1041	1171	2152	2975	227	370	1038	102	204	622
1980-	1015	1932	2536	1071	1134	1363	1832	2890	3548	374	546	1476	162	332	973

ASSUMPTION THREE

1971-72	401	1114	1484	409	566	842	762	1696	2623	136	261	767	65	125	342
1975-76	565	1333	1765	586	718	982	1049	2016	2170	199	337	975	91	180	538
1980-	737	1561	2059	771	877	1127	1347	2349	3127	266	417	1155	118	238	742

The tuition and fee rates projected under Assumption One, which applies the same linear model as was used to project per-pupil cost, rise very rapidly. If tuition rates were to rise as high as the figure in Table II-9, it seems reasonable to assume that many of the schools would have to close. Undoubtedly the schools would take alternative courses of action to slow the cost and tuition rise before they reached the figures projected through to 1980.

One of the purposes of calculating the tuition costs using the same assumptions as were used to calculate cost was so that a ratio of tuition-to-cost could be constructed.

Table II-13 arrays the ratio between the projected per-pupil costs and the projected tuition and fees under Assumptions Two and Three. The purpose is to demonstrate the relationship between cost and income from tuition. The balance between the ratio and the total costs must be made up from other sources, and this may be a crucial factor in the ability of some non-public schools to remain in operation.

The church-connected elementary schools exhibit the largest change in the ratio between costs and income. The projected decline between the portion of the costs which parents pay and the total costs is of utmost importance when attempting to determine the long range ability of non-public schools to remain a viable operation. The non-public elementary schools will have to rely on an increased portion of their operating income to come from outside sources if these projections have any validity. On the average at least eight per cent more of the cost will need to be supplied by gifts and

TABLE II-13

RATIO BETWEEN THE PROJECTED AVERAGE PER-PUPIL COSTS AND TUITIONS
AND FEES FOR SELECTED YEARS THROUGH 1980 USING PROJECTIONS
UNDER ASSUMPTIONS TWO AND THREE

Year	Ind. Sec. Schools		Church-Con. Sec. Schools		Boarding Schools		Church-Con. Elem. Schools (Oahu)	
	II	III	II	III	II	III	II	III
1971-72	.86	.86	.88	.88	.56	.56	.78	.78
1973-74	.88	.88	.89	.85	.54	.54	.76	.76
1975-76	.89	.90	.84	.83	.53	.52	.74	.75
1977-78	.91	.94	.82	.79	.51	.49	.71	.73
1980-	.92	.95	.81	.78	.50	.49	.70	.72

other fund raising sources.

Tuition and income comparisons

There are a number of reasons which contribute to the desire of some parents to provide for a non-public school educational experience for their children. Among those reasons are the social prestige of some of the non-public schools, the religious training in the schools, the belief that private schools have a training program which can be equated to college entrance, etc. Therefore, using a single factor such as the rise in tuition to look for a change in the level of desire for a non-public school education is not particularly satisfactory. On the other hand, there is a point of marginal utility where parents will refuse to pay a larger portion of their income for the factors cited above as reasons for purchasing

a non-public school education.

Comparing projections to other projections is a less than satisfactory method of attempting to predict what is likely to happen in the future. Yet Senate Resolution 105 requests the research team to do exactly that. An attempt has been made to compare the projected tuition rates, using Assumption Two, to the projected per capita income and to a projected family income to ascertain the effects of changes in tuition to changes in income.

A ratio between the projected tuition and fees for the various categories of non-public schools and the projected per capita income is presented in Table II-14.

TABLE II-14

A RATIO BETWEEN PER CAPITA INCOME AND PROJECTED AVERAGE
TUITION FOR SELECTED YEARS THROUGH 1980

Year	Ind. Sec. Schools	Church-Con. Sec. Schools	Boarding Schools	Church-Con. El. Schools (Oahu)	Church-Con. El. Schools (N.Is.)
1971-72	.256	.130	.390	.147	.029
1973-74	.258	.137	.391	.161	.029
1975-76	.261	.143	.393	.173	.030
1977-78	.264	.153	.396	.193	.041
1980-	.265	.155	.396	.197	.046

The purpose of the above table is to show the projected change in tuition as a function of income. One may assume that if parents are willing to spend a given percentage of their income today,

calculated here in terms of per capita income, to send their children to non-public schools, then they will be willing to spend at least that percentage ten years hence; consequently the change in the ratio is the important part of this table.

The church-connected schools exhibit the largest percentage of change, and only in the elementary schools on Oahu is there a change greater than three per cent during this decade. Thus, using economic grounds only for a decision on the probable continuation of the non-public schools, it would appear that the schools will not close as a result of their tuition outstripping the ability of the parents to pay. However, this decision must be tempered by the data presented previously regarding the amount which must be raised by sources other than the parents.

Per capita income may not be the most satisfactory method of looking at cost, so an alternative method was employed. The U.S. Department of Commerce calculates a budget needed to support a family of four in metropolitan areas of the United States. An annual growth figure of 5.9 per cent was applied to the latest estimate of the Department of Commerce and this amount was projected through to 1980. The tuition costs were applied against this figure to demonstrate the effect on household income of sending a child to the various categories of schools. The data are presented below.

The Department of Labor estimates the budget needed for a family of four to live in an "average" standard of living in Honolulu in 1970 to be \$12,776. Using the 5.9 per cent growth in income cited above, the budget for a similar family in 1980 is projected to be

\$22,665. The projected average tuition by selected years for each of the categories previously described is divided by the projected family income for that year and the result is tabled.

TABLE II-15

PROJECTED TUITION DIVIDED BY FAMILY INCOME
FOR SELECTED YEARS THROUGH 1980

Year	Ind. Sec. Schools		Church-Con. Sec. Schools		Boarding Schools		Church-Con. El. Schools (Oahu)	
	% of Tuition Income		% of Tuition Income		% of Tuition Income		% of Tuition Income	
1972-73	\$1186	8.2%	\$ 616	4.4%	\$1800	12.2%	\$ 286	2.0%
1975-76	1427	8.6	783	4.9	2152	12.5	370	2.3
1977-78	1611	8.8	911	5.2	2422	12.8	434	2.4
1980-	1932	9.1	1134	5.7	2890	13.1	546	2.7

The important information in the above table is that although the tuition rise in dollars is large, from \$286 per year to \$546 for the elementary schools on Oahu, the per cent of family income does not change radically (less than one per cent in the case of the church-connected elementary schools on Oahu) Neighbor Island schools were not included since there are no comparable figures for a family of four in non-metropolitan areas. The purpose of the table is to place the previously projected tuition rates into a perspective based upon data projected from other sources.

Identification of possible school closures

The question of which schools will survive and which face probably closure is most complex. Cost data alone, although a factor, is not a valid predictor. Added to cost must be the enrollment performance which

is a function of the desire for non-public school education by the students and their parents; the ability of the religious connected schools to maintain the level of gift income which must bridge the gap between tuition and cost; and the attitude of the parents about the academic and social excellence of the public schools in the area in which they live.

Nine of the schools in this study show evidence, based upon the criteria cited above, of being candidates for closure within the next three years. This is assuming that steps are not taken by administrators in the various schools or in the organizations which sponsor them to remedy some of the problems suggested above. The impact on the public sector if these schools close is calculated in Chapter III.

Looking ahead to the end of this decade, the possibility exists that a minimum of eleven additional schools may close. A number of the closures will be voluntary in the sense that there will be consolidations among certain small enrollment schools which will produce more efficient educational operations. Examples of such possible consolidations may be found in A Study of Catholic Parochial Schools in Hawaii, which was prepared for the Honolulu Diocese by members of the Department of Educational Administration of the University of Hawaii. The reader must bear in mind that few of the independent elementary schools chose to be involved in this study; therefore no data is available to make decisions about their staying power.

SUMMARY

The first thrust in Chapter II was to quantify diverse financial data, and to develop a schema which would facilitate meaningful comparisons between and among the various schools and with other educational systems. The tuition and cost figures which are utilized in the various tables were limited to the past five years because of the dearth of accurate historical financial data prior to that time.

The second thrust was to project per-pupil costs and tuition through 1980, and to attempt to quantify potential school closures during that time.

The following is a summary of the findings in this chapter:

1) Tuition and fees in each of the categories of schools has risen over the last five years. The annual rates vary from a low of 6.8 per cent in the boarding school category to a high of 19.5 per cent in the church-connected schools on the Neighbor Islands.

2) Average tuition rates in 1970-1971 are roughly comparable with other schools of their class in the Western region of the United States.

3) Per-pupil costs in each of the categories have also increased during the five-year period. The independent school average per-pupil cost has risen a rather modest 33 per cent, while the church-connected elementary schools on the Neighbor Islands has changed by 115 per cent.

4) A comparison of the rate of change in per-pupil costs during the four-year period from 1966-1967 through 1969-1970 revealed

the Department of Education of the State of Hawaii has had an average annual cost increase of 8.2 per cent contrasted to a low of 4.4 per cent for the independent secondary schools and a high of 16.8 per cent for the Neighbor Island schools. The five-year annualized rate of change for all public schools in the United States is 10.6 per cent. Per-pupil costs in the church-connected schools on Oahu and the Neighbor Islands have been rising more rapidly than those in public schools either in Hawaii or nationwide.

5) The relationship between per-pupil cost and tuition is one important factor in attempting to determine the vitality of individual schools. The reason is that if tuition does not cover costs, the money must be forthcoming from other sources such as donations, gifts, endowments, etc. The ability of a school to secure these differential monies becomes more crucial as the percentage of the difference between cost and tuition rises. Among the elementary schools in this study, eleven of 35, or 23 per cent, receive over one-half of their per-pupil costs from sources other than tuition and fees. In the secondary schools, only three of 15 or 20 per cent secure more than 25 per cent of their per-pupil costs from outside sources.

6) The effect of rising tuition on enrollments was examined. In the secondary schools the enrollments have continued to rise over the years in the face of an average tuition increase of 41 per cent for the independent schools and 56 per cent for the church-connected secondary schools. However, the church-connected elementary schools have experienced an enrollment decline as tuition has risen (e.g., a loss of 27 per cent of the enrollment in the church-connected

Neighbor Island schools). It would appear that the desire by parents and students for non-public school secondary education is still increasing, but the reverse is true for church-connected elementary education.

7) Although subject to fluctuations by individual schools, it appears that the percentage of income from gifts, donations and endowments tends to remain constant among the schools over time.

8) The amount of capital improvement and new construction does not appear to be a serious problem to the continued operational health of the schools.

9) The effect of inflation on per-pupil costs over the last five years was calculated and tabled.

10) Per-pupil costs were projected through 1980 employing three different assumptions about the rate at which costs are apt to rise. The result of the projections under Assumption One is that the average per-pupil costs would double in every school category except the independent schools. The schools with the highest per-pupil cost in each category were projected to nearly triple their present cost.

Cost projections generated under Assumption Two used per-capita income as an independent variable in a regression model. The effect of correlating per-pupil costs with the projected rise in personal income was to create a set of projections in which the costs rose less rapidly than they did under Assumption One. However, average per-pupil costs were projected to double for three categories of schools by 1980.

In the third set of projections, the assumption made was that school costs would rise less rapidly than the per-capita income, and would tend to level off during the last half of the decade. The effects upon per-pupil cost may be inspected by turning to Table II-11.

An examination of projected costs and tuition under Assumptions Two and Three reveals that in both sets of projections, the ratio of per-pupil cost borne by tuition payments would decline for each category except independent schools. This projected trend would indicate the need for a larger percentage of the per-pupil cost to come from sources other than payments by the parent.

The effect of rising tuition rates as a function of projected per-capita income for the state and a U.S. Department of Labor average budget for a family of four living in Honolulu were calculated. Using tuition/per-capita income, the largest percentage increase by 1980 would be five per cent for the church-connected schools on Oahu. If the average budget for a family of four is employed, the greatest change is calculated to be 1.2 per cent per child for families who have children attending church-connected secondary schools.

The quantification of the schools which are likely to close was based upon multiple criteria (e.g., increase in per-pupil cost, decreasing enrollment, tuition/cost ratios, facilities, etc.).

Based upon the foregoing criteria, nine schools appear to be likely candidates for closure within the next three years. Eleven other schools in the study appear to exhibit tendencies which may result in closure by 1980. The projected cost to the state if these schools do indeed terminate operations is projected in Chapter III.

CHAPTER III

FULL-COST IMPACT OF POSSIBLE NON-PUBLIC SCHOOL CLOSURES ON THE PUBLIC SECTOR

Senate Resolution 105 called for the quantification of the problem of possible school closures in terms of the number of students who may be forced to seek education in the public schools and the resultant full-cost impact on the public sector.

Fulfillment of this requirement was determined to include the identification and analysis of each of the following:

- 1) current enrollments, enrollment trends and enrollment projections for non-public schools in the state of Hawaii;
- 2) a valid range of possible closures of non-public schools;
- 3) elements of public education affected by the impact of these closures; and,
- 4) the public sector cost effect of these closures.

In this chapter, each of these areas of the study will be treated. In each instance, procedures, assumptions, findings, conclusions reached and the implications of these conclusions will be described and discussed.

It becomes evident, in this effort, that the researcher has available a wide range of alternative assumptions from which to select. What may appear "possible" in one sense, may be adjudged "probable" by another, and "desirable" by still a third point of view. These judgments offer little to public policy formulation. In the firm belief

that the purpose to be served here is to provide valid in-put and back-up data to the decision-making process, special effort will be directed to the clarification and examination of available information.

Non-Public School Enrollments

Current enrollment data

The number of students enrolled in public and non-public schools in the state of Hawaii from 1966-1967 to 1971-1972 is shown in Table III-1 and again graphically in Figure III-1. In Table III-1, enrollments are reported as a per cent of total population of the state of Hawaii.

State population has been interpolated from 1960 to 1970 U.S. Census reports. Public school enrollment figures include all enrollments in regular public schools K-12. Total non-public school enrollments have been regularized to reflect the same enrollment groups as the public school figures, excluding for purposes of this study non-public pre-school enrollments.

In October, 1971, 182,463 pupils were enrolled in the public schools in Hawaii in kindergarten through grade 12. In the total non-public schools, 29,927 were enrolled. In the non-public schools which elected to participate in this study, 20,462 pupils were enrolled K-12. This group represented approximately two-thirds of the total non-public school enrollment.

The analysis of enrollments in public and non-public schools indicated that public school enrollment has increased over the six-year period covered by this study both in actual numbers and, more important, as a per cent of total state population. What is indicated is an increase in public school enrollment as a function of increasing

TABLE III-1

SCHOOL ENROLLMENTS IN THE STATE OF HAWAII AS A PER CENT
OF TOTAL STATE POPULATION, 1966-1971

	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72
1) State Population	763,129	764,487	765,845	767,203	768,561	777,157
2) Public School Enrollment ¹ (K-12)	166,375	169,673	173,718	178,564	180,770	182,463
Public School Enrollment as % of Population	21.80%	22.19%	22.68%	23.28%	23.52%	23.48%
3) Total Non-Public School ² Enrollment (K-12)	31,086	30,988	30,651	29,692	29,282	29,927
Non-Public School Enrollment as % of Population	4.07%	4.05%	4.00%	3.87%	3.81%	3.85%
4) Participating Non-Public School Enrollment	21,572	21,658	21,110	20,665	20,244	20,462
Participating Non-Public School Enrollment as % of Population	2.83%	2.83%	2.76%	2.69%	2.63%	2.63%

¹Digest of Hawaii Public Education Data, Statistical Report No. 8, State of Hawaii,
Department of Education, 1971.

²Private School List, State of Hawaii, Department of Education, 1966-1971.

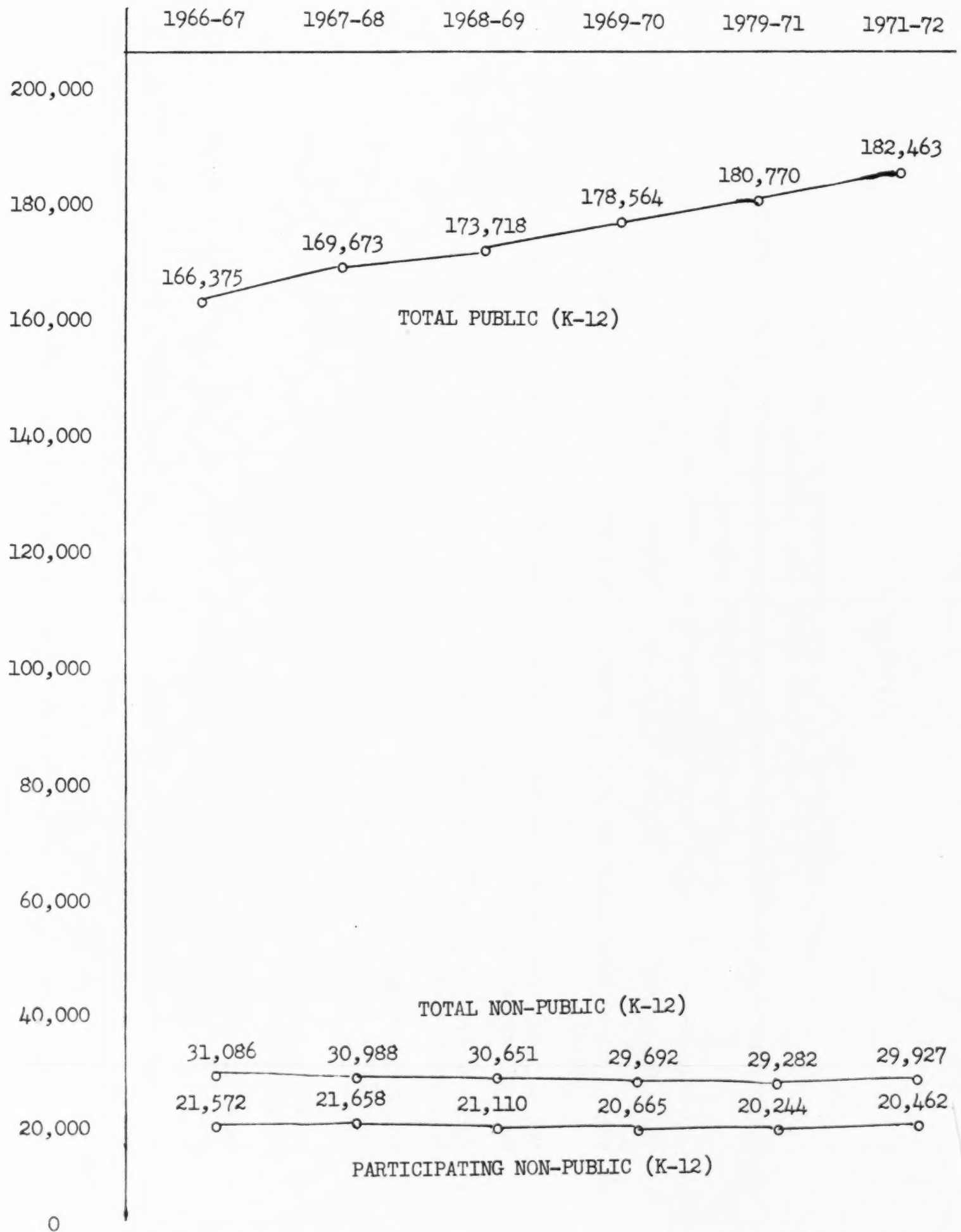


Figure III-1.--School enrollments in the state of Hawaii, 1966-1971.

state population and a broadening of public school programs to reach larger number of pupils, reflecting in some degree increasing educational opportunity and holding power of the public school educational program.

During the same period of time, total non-public school enrollment decreased from 31,086 in 1966 to 29,927 in 1970, and the enrollment in participating non-public schools decreased from 21,572 in 1966 to 20,462 in 1971. In both instances, it was apparent that enrollment in non-public schools has not reflected increases in state population; and, further, that changes in non-public school enrollment are affected by factors other than changes in general population in the state.

Current enrollments among participating schools

Enrollment data among participating non-public schools was analyzed by class and type of schools and is reported in Table III-2. Included in this population were 57 schools with a total enrollment of 20,462 in October, 1971.

In this analysis, seven categories of schools were identified; 1) church-related secondary schools, 2) church-related combined elementary-secondary schools, 3) church-related elementary schools on Oahu, 4) church-related elementary schools on Neighbor Islands, 5) independent secondary schools, 6) independent combined elementary-secondary schools, and 7) independent elementary schools.

Enrollment by school category and by per cent of the total enrollment of this population were determined.

This treatment identified that, although enrollment in non-public schools has generally been decreasing, the decrease in enrollment is

TABLE III-2

ENROLLMENT AMONG PARTICIPATING NON-PUBLIC SCHOOLS
BY CATEGORY AND PER CENT OF TOTAL, 1966-1971

	No. of Schools	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72
Church-Related Secondary	7	3,382	3,379	3,456	3,373	3,479	3,538
% of Total		15.7	15.6	16.4	16.3	17.2	17.3
Church-Related Comb. El/Sec.	2	1,057	1,070	1,104	1,081	1,100	1,244
% of Total		4.9	4.9	5.2	5.2	5.4	6.1
Church-Related Elem. (Oahu)	26	9,798	9,640	9,281	8,927	8,402	8,571
% of Total		45.4	44.5	44.0	43.2	41.5	41.9
Church-Related Elem. (N.Is.)	13	2,990	2,994	2,568	2,390	2,259	2,107
% of Total		13.9	13.8	12.2	11.6	11.2	10.3
All Church- Related	48	17,227	17,083	16,409	15,771	15,240	15,460
% of Total		79.9	78.9	77.7	76.3	75.3	75.6
Ind. Sec.	5	2,536	2,604	2,728	2,781	2,849	2,775
% of Total		11.8	12.0	12.9	13.5	14.1	13.6
Ind. Comb. El/Sec.	1	1,180	1,228	1,203	1,198	1,208	2,775
% of Total		5.5	5.7	5.7	5.8	6.0	6.0
Ind. Elem.	4	629	743	770	915	947	999
% of Total		2.9	3.4	3.7	4.4	4.7	4.9
All Ind.	19*	4,345	4,575	4,701	4,894	5,004	5,002
% of Total		20.1	21.2	22.3	23.7	24.7	24.5
TOTAL	57	21,572	21,658	21,110	20,665	20,244	20,462

*Estimated

confined to two categories of non-public schools: church-related elementary schools on Oahu and those on the Neighbor Islands. Both categories showed decreases in actual enrollments and decrease as a per cent of the total non-public school enrollment represented.

In the period from 1966 to 1971, enrollment in church-related elementary schools on Oahu decreased from 9,798 to 8,571, while enrollment in church-related elementary schools on the Neighbor Islands decreased from 2,990 to 2,107. In contrast, enrollment in all other categories showed an enrollment increase for the same period.

Table III-2 demonstrates relative changes among non-public school enrollments of further value in understanding the role and status of non-public education in the state of Hawaii. Enrollment in church-related schools has decreased from about 80 per cent of the total to 75 per cent in the past six years. Enrollment in independent non-public schools has increased from 20 per cent to 25 per cent of the total, an actual enrollment increase of about 650 pupils in this period. Church-related secondary schools (seven) and combined elementary-secondary schools (two) have been stable, showing a slight increase, over this period. The nature of these enrollments must be reviewed in light of increasing school costs and tuition increases reported elsewhere in this study.

A net increase in enrollment among church-related elementary schools on Oahu from 1970 to 1971 must also be noted. Although this increase represented only 169 pupils among 26 schools, it may represent or portend a vitality among church-related elementary schools which could counter the prevailing trend of the past six years.

Enrollment projections for non-public schools

On the basis of enrollment data available from 1966 to 1971, non-public school enrollments have been projected through school year 1980-1981. The nature of enrollment projections and the limitations of enrollment projections should be noted. Given comparable data over a period of time, projections or trends may be identified on the assumption that the same conditions exist throughout the projected period. The validity of the projections then is conditioned by the degree to which these conditions change.

For the purposes of this study, the average annual change in enrollments was determined for each included category and enrollments projected. These projections are shown in Tables III-3 and 4.

Non-public school enrollments related to state population projections.-Available projections of the total population of the state of Hawaii have indicated a continuing increase through 1980. The projections of public school enrollments are shown to continue at about 23 per cent of the total state population, increasing from 183,860 in 1972-1973 to 204,647 in 1980-1981.

The projection of total non-public school enrollments over this same period is shown as decreasing annually in numbers from 29,695 in 1972 to 27,839 in 1980. Non-public school enrollment is shown as decreasing from 3.75 per cent of the total state population in 1972 to 3.10 per cent in 1980. The enrollment of the participating non-public schools is projected to follow a similar pattern, decreasing by an actual enrollment of 1,776 over the period of nine years.

TABLE III-3

PROJECTED SCHOOL ENROLLMENTS IN THE STATE OF HAWAII AS A
PER CENT OF TOTAL STATE POPULATION, 1972-1980

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
1) State Population ³	792,581	804,789	817,235	829,914	842,838	856,016	869,450	883,157	897,147
2) Public School Enrollment ⁴ (K-12)	183,581	186,750	189,456	192,322	194,787*	197,252*	199,717*	202,182*	204,647*
Public School Enrollment as % of Population	23.20%	23.21%	23.18%	23.17%	23.11%	23.04%	22.97%	22.89%	22.81%
3) Non-Public School Enrollment (K-12)	29,695	29,463	29,231	28,999	28,767	28,535	28,303	28,071	27,839
Non-Public School Enrollment as % of Population	3.75%	3.66%	3.58%	3.49%	3.41%	3.33%	3.26%	3.18%	3.10%
4) Participating Non-Public School Enrollment	20,240	20,018	19,796	19,574	19,352	19,130	18,908	18,686	18,464
Participating Non-Public School Enrollment as % of Population	2.55%	2.49%	2.42%	2.36%	2.30%	2.23%	2.17%	2.12%	2.06%

* Estimated

³ Illustrative Projections of the Population of Hawaii, 1970-2020, Statistical Report 78, State of Hawaii, Department of Planning and Economic Development, January 4, 1971.

⁴ Digest of Hawaii Public Education Data, Statistical Report No. 8, State of Hawaii, Department of Education, 1970. (through 1975-76)

TABLE III-4

PROJECTED ENROLLMENT AMONG PARTICIPATING NON-PUBLIC SCHOOLS
BY CATEGORY AND PER CENT OF TOTAL 1972-1980

AV. AN. CHANGE	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
Church-Related Sec. % of Total	+31 3,569	3,600	3,631	3,662	3,693	3,724	3,755	3,786	3,817
Church-Related Comb. El/Sec. % of Total	+0.9% 1,281	17.8 1,318	18.2 1,355	18.6 1,392	18.9 1,439	19.3 1,466	19.7 1,503	20.1 1,540	20.5 1,577
Church-Related Elem. (Oahu) % of Total	+3.5% 8,326	6.5 8,081	6.8 7,836	7.1 7,591	7.3 7,346	7.6 7,101	7.9 6,856	8.2 6,611	8.5 6,366
Church-Related Elem. (N.Is.) % of Total	-2.5% 40.8	40.5	39.3	38.5	37.5	36.8	36.0	35.1	34.2
Church-Related Elem. (N.Is.) % of Total	-177 1,932	1,753	1,576	1,399	1,222	1,045	868	691	514
Church-Related Elem. (N.Is.) % of Total	-5.9% 9.5	8.7	7.9	7.1	6.2	5.4	4.6	3.7	2.8
All Church-Related % of Total	-354 15,106	14,752	14,398	14,044	13,690	13,336	12,982	12,628	12,244
All Church-Related % of Total	-0.4% 74.1	73.1	72.2	71.2	70.0	69.1	68.1	67.0	65.9
Independent Sec. % of Total	+48 2,983	3,031	3,079	3,127	3,175	3,223	3,271	3,319	3,367
Independent Comb. El/Sec. % of Total	+1.9% 14.6	15.0	15.4	15.9	16.2	16.7	17.2	17.6	18.1
Independent Comb. El/Sec. % of Total	+10 1,238	1,248	1,258	1,268	1,278	1,288	1,298	1,308	1,318
Independent Elementary % of Total	+0.9% 6.1	6.2	6.3	6.4	6.5	6.7	6.8	6.9	7.1
Independent Elementary % of Total	+74 1,073	1,147	1,221	1,295	1,369	1,443	1,517	1,591	1,665
Independent Elementary % of Total	+11.80% 5.3	5.7	6.1	6.6	7.0	7.5	8.0	8.4	9.0
All Independent % of Total	+132 5,294	5,426	5,558	5,690	5,882	5,954	6,086	6,218	6,350
All Independent % of Total	+3.0% 26.0	26.9	27.9	28.8	30.5	30.9	31.8	33.0	34.2
TOTAL	20,400	20,178	19,956	19,734	19,572	19,290	19,068	18,846	18,594

Projected enrollments among participating non-public schools.

For those non-public schools participating in the study, enrollments have been projected to follow trends established in the period of 1966-1971. If the same conditions affecting non-public school enrollments were to continue, five categories of non-public schools will continue to increase enrollments and two will continue to decrease. These projections emphasize the increasing enrollments among independent non-public schools, and the decreasing enrollments among church-related elementary schools throughout the state.

Church-related elementary schools on Oahu, unless the increase from 1970-1971 to 1971-1972 is indicative of changing patterns of non-public school enrollment, project a decrease from 8,571 in 1971-1972 to 6,366 in 1980-1981. Church-related elementary schools on the Neighbor Islands project a decrease from an actual enrollment of 2,107 in 1971-1972 to 514 in 1980-1981.

Possible Closures of Non-public Schools

The second requirement of this portion of the Legislative Resolution called for the identification of a valid range of possible closures of non-public schools.

The decision to close a non-public school resides obviously within the jurisdiction of the group who founded and are operating that school. Such a decision, just as obviously, is conditioned by the group's assessment of those success criteria which they deem appropriate, not necessarily those which might be utilized by an external body or organ. In this sense, one group might be willing to expend considerable personal

effort and financial sacrifice to maintain a non-public educational program in the face of increasing costs, increasing problems, and even diminishing educational returns, because of their commitment to the purposes they seek to achieve.

While other portions of this study speak more directly to the question of public policy formulation, it appears appropriate here to make note of the fact that public policy may 1) deliberately encourage these efforts as a means of encouraging educational alternatives, 2) deliberately discourage these efforts as a means of reducing variance among educational outcomes which affect the public, or 3) deliberately remain neutral in such matters.

Regardless of which policy may ultimately be determined as most appropriate, it appears necessary that public planners become and remain aware of the possible effect that private sector decisions may have on the private. Particularly in the area of education, where the public sector has direct and immediate responsibility if it is not exercised by the private sector, the planning of public education must anticipate all changes which may affect it.

Alternatives of possible closures of non-public schools range through two identifiable dimensions: 1) scope, or the number of schools which might close, ranging from all to non, and 2) time of closure, or when such schools might close, ranging from immediate to some distant time.

Anticipating the determination of the effect non-public school closures may have on public schools, it is apparent that the effect will itself be conditioned by not only how many schools might close, but also

when these closures might take effect. The analysis of non-public school enrollments makes apparent the fact that public schools are currently experiencing a general increase in enrollments due to 1) increasing population in the state, and 2) decreasing enrollments in certain categories of non-public schools.

The purpose of this study then required identification of possible non-public school closures. This has been done, keeping clearly in mind the tenuous nature of such judgements, for two classes of schools.

- 1) the possible closure in the near future of a limited number of schools facing serious problems, and
- 2) the possible closure in the intermediate future of all church-related elementary schools.

In the first instance, nine schools were identified by one or more of the following criteria: a) the schools were experiencing even more rapid decreases in enrollment than others schools in the same category, b) the schools were experiencing rapid increases in operating costs and resultant tuition increases, c) the schools occupied facilities requiring major renovation to make them functional, or d) the schools were of such a size as to make it appear unable to respond effectively to these problems. A total of nine schools were so identified with a total 1971-1972 enrollment of 1,516.

In the second instance, determination was based on current and projected enrollment trends among non-public schools in the state, and the projection of operating costs and revenues of schools with decreasing enrollments. This group included twenty schools with a total 1971-1972 enrollment of 3,340.

In both instances, the assumption has been made that these are the classes of schools which most likely face possible closure; it must be asserted that it is not the purpose of this study to prophesy the failure of human effort by committed school personnel.

Elements Affected by Non-Public School Closures

The analysis of elements of the public school program which would be affected by non-public school closures was limited to those directly related to cost items. These included the following:

- 1) Identification of public school attendance site of each student currently enrolled in non-public schools. In order to determine the manner in which the closure of a given non-public school or class of schools would affect public schools, the total enrollment of participating non-public schools (20,076 pupils) was surveyed to determine the public school which they would attend by place of residence if they were not attending a non-public school. Of the population, excluding seniors (grade 12) who were scheduled to graduate in Spring, 1972, 14,062 usable results were returned and tabulated by public school and grade. This represented a usable return of 75 per cent overall.

Information obtained by this survey was obtained to provide an accurate analysis of enrollment impact on each of the state's 216 public schools.

- 2) Identification of instructional "space" available in each public school. Current enrollment (October, 1971) and the number of instructional personnel assigned each public school

was identified, and current pupil-teacher ratio computed for each public school in the state.

On the basis of a maximum pupil-teacher ratio of 27:1 in elementary schools and 28:1 in secondary schools, the number of additional enrollments which could possibly be accepted before the hiring of additional instructional staff became necessary was computed for each public school.

Several considerations must be noted here. The employment of the above pupil-teacher ratio is not to suggest the desirability of operating educational programs at this level of loading. It is obvious that maximum class size is currently a matter being negotiated by the public school teachers in the state. A change in this quantification subsequently would effect the assumptions employed here. Secondly, the educational desirability of this level of loading must be questioned. The effect maximum loading has on the reduction of instructional flexibility is only one of several qualitative considerations which must be made. Finally, current and desirable practices of alternative staffing--team teaching, three-on-two, and alternative grouping plans--limit the effectiveness of teacher-pupil ratio as a determiner of instructional space currently available in the public schools.

- 3) Identification of physical space available in each public school. On the basis of information available (Evaluative Data of Department of Education Classroom Facilities, State of Hawaii, Department of Education, 1971), a maximum number

of additional enrollments which could be housed in currently available facilities was determined.

Again, although these computations provide valid estimates of available physical space, other possible effects on educational quality must be considered. Current professional literature on school plant planning suggests utilization of facilities up to 85 per cent of their designed maximum capacity may be optimum, allowing a desirable degree of flexibility of utilization to accommodate day-to-day changes in usage. Utilization above this level will likely have detrimental effects on qualitative program factors.

It should also be made apparent that, although space designated as available for classroom use may exist, it currently may provide highly desirable alternative functions in a given school setting, being utilized for individual study carrels, library and audio-visual materials depository, teacher work center, or teacher lounges. Conversion of this space to classrooms to meet possible enrollment increases must be considered in terms of its effect on total school operations.

- 4) Identification of operating costs affected by increased enrollment. Based on the analysis of school operating costs, four cost groupings were identified to be used in computing the full-cost impact of possible non-public school closures on the public sector. They were:
 - a) The operating costs accrued when possible additional

enrollments do not require additional instructional, administrative, or service personnel. These costs include the following:

Administrative: Supplies and equipment, other government agencies.

Instruction: Textbooks, library books, equipment, audio-visual, classroom supplies, and other instructional expenses.

Attendance and health services

Pupil transportation

Operation of school plants

Maintenance of school plants

Food services: Supplies and equipment

Excluded at this level of costing were:

Administration: Personal services

Instruction: Personal services

Fixed charges: Social Security, retirement, insurance, medical, workman's compensation, and unemployment compensation payments.

Special education

Summer school

Athletics

Food services: Personal services

Capital outlay

Debt service

Public libraries

- b) The operating costs accrued when possible additional enrollments require the addition of a teacher:
All costs included in a) above, plus
Instruction: Personal services
Fixed charges
- c) The operating costs accrued when possible additional enrollments exceed 750 for a given school unit and require the addition of other personal services:
Administration: Personal services
Food services: Personal services
- d) Costs accrued when possible additional enrollments require construction of additional physical facilities.
- 5) Projection of changes in operating costs over time. Based on the analysis of experience with actual and current school operating costs in the state of Hawaii, the average annual rate of change was identified and operating costs projected over the time period included in the possible non-public school closures.

Full-Cost Impact to Public Sector

To fulfill the requirements of the legislative resolution and to provide a clearer understanding of the educational services currently provided by non-public schools, three cost studies were performed:

- 1) Full-cost impact on the public sector of the possible closure by Spring, 1974, of nine selected non-public schools;

- 2) full cost impact on the public sector of possible closure by Spring, 1976, of twenty selected non-public schools;
- 3) cost to the public sector of providing current level of educational services in public schools to students enrolled in participating non-public schools.

Cost determination procedures

In each instance, the following procedures were used to make cost determination:

- 1) Students currently enrolled in grades K-11 of the targeted non-public schools were distributed by grade to the public school which, by residence, they would attend in the fall of 1972. Current enrollments by grade were advanced one year and articulation from elementary school to intermediate school, or intermediate school to high school was provided. Students who would graduate in Spring, 1972 were excluded as they would require no further services at this educational level.
- 2) For each impacted public school, anticipated additional enrollments of kindergarten pupils in the Fall of 1972 was computed for each public school as the average impact at other grade levels in that school. This figure was added to adjust enrollments for anticipated incoming enrollments, and the total adjusted enrollment of each impacted public school determined.
- 3) On the basis of enrollment trends from Fall, 1966 through

TABLE III-5

FULL-COST IMPACT OF POSSIBLE CLOSURE OF NINE
SELECTED SCHOOLS BY SPRING, 1974

Cost Level	(1) Current Enrollment of Target Group (1971-72)	(2) Adjustment for Kindergarten Enrollment (1971-72)	(3) Adjusted Enrollment of Target Group (1971-72) (1+2)	(4) Adjustment for Annual Change in Enrollment	(5) Pro. Enr. of Target to Poss. Clo. Date (3+4)	(6) Current Operating Costs by Level ADE (1971-72)	(7) Adj. for Annual Chng. in Oper. Cost ADE	(8) Pro. Oper. Costs at Poss. Clo. Date ADE (6+7)	(9) Total Cost Projections by Level (5+8)
1	1375	120	1495	-3.7% $\times$ 3	1265	\$191.62	-\$0.23 $\times$ 3	\$190.93	\$241,526.45
2					64	\$859.77	+\$66.00 $\times$ 3	\$1057.77	\$ 67,697.28
TOTAL					1,329				\$309,223.73

TABLE III-6

FULL-COST IMPACT OF POSSIBLE CLOSURE OF TWENTY
SELECTED SCHOOLS BY SPRING, 1976

Cost Level	(1) Current Enrollment of Target Group (1971-72)	(2) Adjustment for Kindergarten Enrollment (1971-72)	(3) Adjusted Enrollment of Target Group (1+2) (1971-72)	(4) Adjustment for Annual Change in Enrollment	(5) Pro. Enr. of Target Gr. to Poss. Clo. Date (3+4) (1971-72)	(6) Current Operating Costs by Level ADE (1971-72)	(7) Adj. for Annual Chng. in Oper. Cost. ADE	(8) Pro. Oper. Costs at Poss. Clo. Date ADE (6+7)	(9) Total Cost Projections by Level (5x8)
1	1,944	288	2,232	-4.31%x5	1,658	\$191.62	-\$0.23x5	\$190.47	\$315,799.26
2					80	859.77	+66.00x5	\$1,189.77	95,181.60
TOTAL					1,738				\$410,932.86

TABLE III-7

FULL-COST TO PUBLIC SECTOR OF ALL PARTICIPATING NON-PUBLIC
SCHOOLS ON PROJECTED 1972-73 DOE COSTS

	(1) Cost Level	(2) Current Enrollment of Target Group (1971-72)	(3) Adjusted Enrollment of Target Group (1971-72) (1+2)	(4) Adjustment for Annual Change in Enrollment	(5) Pro. Enr. of Target Gr. to Poss. Clo. Date (3+4)	(6) Current Operating Costs by Level ADE (1971-72)	(7) Adj. for Annual Chng. in Oper. Cost ADE	(8) Pro. Oper. Costs at Poss. Clo. Date ADE (6+7)	(9) Total Cost Projections by Level (5+8)
1	13,906	1,047	14,953	-1.0%xl	13,468	\$181.62	-\$0.23xl	\$191.39	\$2,580,738.16
2					1,336	859.77	+66.00xl	925.77	1,326,828.72
TOTAL					\$14,804				\$3,907,566.88

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through Fall, 1971, the per cent annual change in enrollments for the target group of non-public schools was computed and enrollments projected to the date of possible closure.

- 4) The impact of enrollments on each public school was audited against: a) 1971-1972 pupil-teacher ratios in each school to determine the number of students who could be provided teaching in terms of current staff, and the number of students who would require teaching service above the level of current staff, and 2) the number of students who could be housed in classrooms currently available or under construction and available in Fall, 1972, to determine the number of additional classroom units which would be required at each public school site.
- 5) Per-pupil operating costs of public schools based on average daily enrollment (ADE) were determined by level of service required as previously described.
- 6) On the basis of operating cost trends from Fall, 1966 through Spring, 1969, the annual change in dollars/ADE was determined and projected to the date of possible closure.
- 7) Total projected costs by level of service was computed and totaled.

From the various target groups, these cost projections are summarized in Tables III-5, III-6, and III-7.

Possible closure of nine selected schools by Spring, 1974

The possible closure of the nine selected non-public schools in

this group would involve 1,265 non-public school pupils, and have an enrollment impact on 46 public schools in the state, ranging from a single additional enrollment in five public schools to 164 additional students at one school.

Using the pupil-teacher ratio assumption described earlier, all these pupils could be accommodated by current teaching staff, with one exception involving a total of 64 pupils in one public school.

The impact on projected public school operating costs would be \$309,223.73; however, this possible closure would require provision of 29 classroom units above those presently available or under construction. These are summarized in Table III-8.

Possible closure of twenty selected schools by Spring, 1976

The possible closure of the twenty selected non-public schools in this group would involve 1,658 non-public school pupils, and have an enrollment impact on 102 public schools in the state. This enrollment impact would range from a single enrollment in 17 public schools to 164 additional students at one school.

Using the pupil-teacher ratio assumption described earlier, these pupils could be accommodated by current teaching staff, with two exceptions involving a total of 80 pupils in two different public schools.

The impact on projected public school operating costs would be \$410,980.86; however, this possible closure would require provision of 43 classroom units above those presently available or under construction.

Providing current service to non-public pupils

The public sector cost of providing current level of educational service to non-public school pupils was determined using projected 1972-1973 enrollments and projected 1972-1973 operated costs. Enrollments in participating non-public schools would involve 13,468 pupils and impact all but eleven of the public schools in the state, those principally in remote areas of the Neighbor Islands.

Additional teaching staff would be required for 1,335 pupils, and the impact on projected public school operating costs would be \$3,907,566.88. Throughout the state, the provision of 307 classroom units would be required.

Additional classroom units

For each of the three above conditions, the number of additional classroom units which would be required is shown by district in Table III-8.

TABLE III-8

ADDITIONAL CLASSROOM UNITS REQUIRED
BY EACH OF THREE PROJECTIONS

	Honolulu	Central	Leeward	Windward	Hawaii	Maui	Kauai	Total
I	6	3	-	1	5	8	6	29
II	6	7	-	3	5	16	6	43
III	110	42	33	77	13	24	8	307

Construction costs of classrooms ranged from \$30,000 to \$47,000 per unit on current projects reported by DOE Facilities and Auxiliary Branch. Factors determining cost variance included 1) typical

elementary instructional use, in comparison to specialized facilities, such as secondary laboratories or shops, and 2) construction costs on Oahu, in comparison with Neighbor Island costs which were five to ten per cent higher because of the additional cost of shipping construction materials. Estimated average costs for construction were \$35,000 per classroom unit.

Similarly, equipment costs on current projects ranged from \$1,400 to \$1,700 per classroom unit, depending on the designed instructional use of the facility. Estimated average costs for equipment were \$1,500 per classroom unit.

Using these cost estimates, the provision of the classroom facilities required for each of the possible closures would be: 1) for nine schools: 29 classroom units, or \$478,500, 2) for twenty schools: 43 classroom units, or \$709,500, 3) for the population studies: 307 classroom units, or \$5,065,500.

Alternatives to the construction of additional classroom units exist and could become a part of this consideration: rental, conversion, renovation, the redrawing of attendance boundaries.

Project to full-cost impact

Cost projections of possible closure of non-public schools and the cost determination of providing current service to non-public school pupils were limited to the population studies. With regard to the possible closure of the two selected groups of schools, data were complete with the exception of a very small number of public school attendance identifications.

For the cost determination of providing current service to non-

public school pupils, as earlier noted, usable returns represented about 75 per cent of the enrollment of participating non-public schools. Several schools included in other parts of this study elected not to participate in the audit of public school attendance site by pupil.

Cost estimates for this population represent reliable data, indicating \$3,907,567 in operating costs and \$5,065,000 in construction costs.

It is possible to estimate these costs for the population of non-public school pupils not included in this study, using the assumption that the population studies (20,462 pupils) is representative of the total population (29,927 pupils). On the basis of this assumption, the cost to the public sector of providing current level of educational services in public schools to all pupils enrolled in all non-public schools (K-12) would require \$5,143,530 in operating costs, and \$6,667,059 in construction costs.

Summary

In this chapter, non-public school enrollments from 1966 to the present were analyzed and compared to public school enrollments and state population figures. It was established that non-public school enrollments have been quite stable over this period of time, although the state of Hawaii has experienced considerable growth in population.

The analysis of the enrollments among participating non-public schools disclosed a widely differentiated enrollment pattern with some classes of non-public schools experiencing growth, others remaining

stable, while the enrollments in church-related elementary schools decreased markedly. Enrollments in each of these classes were projected to school year 1980-1981.

Non-public school enrollments were audited by each pupil and distributed to the public school site each pupil would attend were he not enrolled in non-public education. Using identified assumptions if possible closure of non-public schools, the impact on enrollment in each public school was determined statewide for nearly 15,000 non-public school pupils.

Using available data on public school operating costs over the past three years, the cost impact to the public sector of possible non-public school closures was computed differentially for 1) accommodation of these pupils under available current services, 2) provision of additional required instructional services, and 3) provision of addition required classroom facilities.

These cost estimates were adjusted to include total population, reflecting the cost of providing current service in public schools to students enrolled in non-public schools to be \$5,143,530 in operating costs and \$6,667,059 in construction costs.

CHAPTER IV

NON-PUBLIC HIGHER EDUCATION IN HAWAII

This portion of the study was limited to the four non-public accredited bachelor's degree granting institutions of higher education physically located in the state of Hawaii, which included Church College of Hawaii, Chaminade College, Hawaii Loa College, and the Maui campus of United States International University. One non-accredited institution, Hawaii Pacific College, was invited to participate, but declined. All proprietary institutions such as technical schools and business colleges were judged not to be within the purview of the intent of the study and were excluded. Finally, the general format of the higher education section of the study request by Senate Resolution 105 differs somewhat in style and content from the K-12 section of the study, primarily because of the non-comparability of the data in many areas.

Procedure

Each institution was contacted by mail and invited to participate in the study. Subsequent communications with designated institutional officials both by telephone and campus visits were conducted by the writer. These designated officials were informed of the contents of the report as it pertained to their institution,

and were requested to review their portion prior to the final preparation of the report.

Scope of the study

The following information was requested from the participating institutions:

- 1) Demographic data concerning students
- 2) Tuition, room and board costs, where applicable
- 3) Present student enrollment and future enrollment projections
- 4) Total financial aid available to students
- 5) Federal institutional aid
- 6) Grants, gifts and endowments
- 7) Total operating costs
- 8) Number employed on faculty and staff
- 9) Capital improvements
- 10) Debts
- 11) Faculty salary schedule
- 12) Philosophy and goals of the institution
- 13) Financial problems with respect to the present and the immediate future
- 14) Possibility of closure

The above areas were examined as they currently exist and future projections for the next decade were requested when appropriate and feasible. It should also be understood that some data was either not available or considered confidential, thus it does not appear in this report.

Church College of Hawaii

Church College of Hawaii is one of three institutions of higher education owned and operated by the Church of Jesus Christ of the Latter Day Saints, the other two being Ricks College in Idaho and Brigham Young University in Utah. Church College is the smallest of the three institutions with a campus enrollment of 1300 students, while Ricks and Brigham Young have enrollments of 4500 and 27,000

respectively.

The Latter Day Saints Church views Church College as its educational arm in Hawaii and the South Pacific area, and states that this was their primary reason for locating an institution of higher education in Hawaii. This rationale is demonstrated by the differential tuition rates of \$400 per year for Latter Day Saints students who reside in the Pacific area, \$600 per year for all mainland Latter Day Saints students, and \$900 per year for all non-Latter Day Saints students. One has to but visit Church College's campus to note the predominant number of polynesian students in attendance. These polynesian students usually come from Latter Day Saints families that cannot afford even the low preferential tuition rates, and many meet their college expenses through employment at the Polynesian Cultural Center. The procedure is for Church College to award a loan for educational and living expenses and the student then repays the loan through wages earned at the Polynesian Cultural Center.

Church College is unique among the four institutions surveyed in that it does not apply for and is apparently not interested in receiving any federal monies. This includes National Defense Student Loans, College Work Study funds, Educational Opportunities Grants funds, grants for facilities, etc. For example, a new student union building is currently being constructed from Latter Day Saints funds, although partial capital improvement financial assistance could have been applied for through the federal government.

Student enrollment at Church College is projected by the college administration to slowly increase from the current 1300 to approximately

2000 by 1980. The latter figure represents a ceiling on growth. No major increase in capital improvements is anticipated within the next decade since the present physical plant can accommodate the projected increase in enrollment. There is essentially no outstanding debt on the physical plant since the procedure in new construction involves a partial outright grant from the Latter Day Saints Church plus a loan from the church to cover the balance of the cost of construction. Thus one might say that the debts they owe are owed to themselves.

The probability of closure within the next decade appears to be exceedingly remote. There appears to be no major financial problems. The only reason mentioned as a possibility involving closure would be completion of Church College's mission to educate Latter Day Saints students in the South Pacific area. New institutions of higher education such as the Community Colleges of American Samoa and Micronesia, the University of Guam, and the University of the South Pacific in Fiji are beginning to absorb some of the potential student population. Should the day arrive when the Latter Day Saints Church is of the opinion that Church College has completed its mission, the physical facilities would probably be offered for sale to the state of Hawaii, such as was done in the case of Dixie and Snow Colleges in Utah.

Hawaii Loa College

Major impetus for the establishment of Hawaii Loa College was a combined grant of \$850,000 by the Methodist Church, Episcopal Church, Presbyterian Church, and the United Church of Christ, plus a gift of 150 acres of land in windward Oahu by Harold K. L. Castle. A

combination library, classroom and administrative office building was recently completed. A dormitory and dining facility will be constructed in the near future and the college is currently soliciting matching supplementary funds for a Housing and Urban Development College Facilities Loan for the construction of these additional capital improvements. It is the intent of Hawaii Loa to offer a quality four-year liberal arts education to the citizens of Hawaii with particular emphasis on services to those who reside in windward Oahu. Its curricula feature innovative programs, low student-teacher ratios, and a high degree of personal interaction among faculty, students and administration.

Hawaii Loa has a current enrollment of 170 students, and graduated its first class in 1971. A maximum enrollment of 800 is expected by 1980. Tuition for 1971-1972 is \$1200 per year and will be raised to \$1400 per year in 1974-1975 with a final raise to \$1600 in 1976. Financial aid in the amount of approximately \$45,000 per year is currently available to students. This aid includes the College Work Study Program (\$4000), National Defense Student Loans (\$9000), and student campus employment (\$32,000).

Hawaii Loa was established at a time when the financial outlook for higher education was far more favorable than currently exists. Building programs and capital improvements for the immediate future have been greatly reduced in scope. It may well be that active recruitment of mainland students may become necessary in order to maintain needed student enrollments, since the proposed Windward Community College represents a possible drain on potential student enrollment. Hawaii Loa has no endowment and has to meet the difference

between tuition income and operating costs through annual donations and grants from churches, trusts, foundations and business corporations. It is hoped that by the mid 1970's income from increased student enrollment will rise to the point where it will generate the bulk of the needed operating income.

The opening date of Windward Community College may well be crucial to the long range financial situation at Hawaii Loa. Of the four colleges surveyed in this study, only Hawaii Loa has had the burden of constructing its entire physical plant at a time when labor, material and site development costs are at an all-time high. Debt service on loans to cover these construction costs make up a significant proportion of the operating budget of the institution.

College officials are concerned with the financial future of Hawaii Loa. They believe that given enough time and an upturn in the state and national economic climate, which in turn stimulates gifts and grants, Hawaii Loa can survive the crucial years of the mid 1970's. If, however, the college cannot financially continue, the physical plant would probably be offered for sale for educational purposes. The terms of the land grant stipulate that the land must be used for educational purposes or revert to the Castle Foundation.

Chaminade College

Chaminade College was founded in 1955 by the Society of Mary. The Society operates several high schools on the west coast, St. Louis High School, and St. Anthony's High School on Maui in addition to Chaminade College. Its faculty is composed primarily of Brothers

of the Society of Mary and lay teachers. The primary aim of Chaminade is to offer various baccalaureate programs to Catholic residents of Hawaii, although many non-Catholics and non-residents are enrolled on the Kaimuki campus and in extension courses.

Chaminade has a current enrollment of 900 full-time students with approximately 450 additional students enrolled on a part-time basis. Enrollment is projected by college officials to rise to about 1200 on the Kaimuki campus by 1980. At the present time approximately \$210,000 per year in financial aid is available to the students through the College Work Study Program (\$30,000), Educational Opportunities Grants (\$21,000), National Defense Student Loans (\$63,000), campus employment (\$35,000), Law Enforcement Education Program (\$31,000), Model Cities (\$9,000), and various church and private scholarships (\$24,000).

Chaminade's physical plant is about to undergo a major expansion program. A fund drive is currently underway to raise \$7,200,000 in a seven to eight year period which will provide a learning resources center, twelve academic chairs, a communication arts center, a dining commons, athletic facilities and faculty residences. In a given year, grants and gifts yield approximately \$100,000. However, this amount will be much lower in future years since many of the granting agencies will be donating directly to the capital improvement program. Chaminade has a small endowment fund of approximately \$25,000 at the present time.

Chaminade currently faces a financial problem with respect to

employing and retaining faculty. The number of Brothers of the Society of Mary who exercise the option to teach in higher education is steadily diminishing. Many see college teaching as less challenging or rewarding than direct involvement with the social problems of our society. Since their basic salary is only \$4,600 per year, it costs a minimum of twice that amount to replace a Brother with a lay instructor. Chaminade also finds that the Oahu Community Colleges now compete in the hiring of lay teachers, thus forcing Chaminade to bid higher in the academic marketplace for staff. This financial situation is not unlike that faced by parochial education in grades K-12.

Chaminade does not anticipate closure in the next decade, but it is well aware of the financial problems facing it, especially as it pertains to the total context of Catholic education in Hawaii at all levels.

United States International University-Maui

United States International University was founded approximately twenty years ago in San Diego. The University currently enrolls 8000 students on eight campuses and offers academic programs ranging from the baccalaureate to the doctorate. Three of the campuses are located in San Diego, one in Steamboat Springs, Colorado, one in Mexico City, one in Ashdown Park near London, England, one in Nairobi, Kenya, and the Maui campus, which is located on the former campus of Maunaolu College. Several additional campuses are projected for the future. The curricula emphasize the international flavor of the institution. For example, all students on the Maui campus are freshmen and

sophomores majoring in Pacific and Asian studies. The usual procedure for United States International University students is to spend the first three years of college at the "satellite" campuses and return to San Diego for their senior year at either the Elliot or California Western campuses, since the "satellite" campuses do not grant degrees.

Current enrollment at United States International University-Maui is 120 students, 50 per cent of whom are from the South Pacific area. Enrollment is projected to rise to 1500 students by 1980. Present facilities allow for the housing of 225 students and additional facilities would have to be constructed to accommodate the anticipated expansion of student enrollment. Tuition for 1971-1972 is \$1890 per year and room and board is \$1200 for three quarters. It is hoped that a fourth (summer) quarter will be added in the near future. Approximately 80 per cent of all United States International University-Maui students are on some type of financial aid, thus the annual financial aid to students is approximately \$200,000. This financial aid includes 42 Work-Study students, 42 Educational Opportunities Grants, twelve students working on campus, six National Defense Student Loans, three Trust Territory scholarships, and 58 United States International University and National Defense Education Act loans.

Since the majority of the students are not Hawaii residents, and follow a highly specialized program of studies, the existence of nearby Maui Community College does not pose a financial threat in the sense that it would draw large numbers of students United States International University-Maui campus. On the other hand, the physical plant is basically a wooden structure which will in all probability involve

extensive repairs in the near future exclusive of new capital improvements.

Finally, it has little endowment. Its financial backing is primarily the annual effort of its president and founder, William Rust, who has been able to date to secure grants and gifts to meet operating expenses on a year-to-year basis. Here again, the state of the national economy has a direct effect on those institutions and organizations who are both willing and able to donate funds for the support of non-public higher education. Thus the financial situation at United States International University-Maui with respect to future projections remains clouded, since the majority financial backing of the institution is generated outside the state of Hawaii.

Inter-College Comparison

Table IV-1 presents comparative data on a variety of factors which influence the institutional posture of the colleges in the study. The first three factors are pertinent student data; these are followed by facts on current and projected enrollments. Financial data including staff salary ranges are also included.

The operating costs vary greatly. Economy of scale apparently is a factor since the two smallest schools enrollment-wise have per-pupil costs more than twice as high as the other institutions.

Only one school reported an endowment, and the income from that source was relatively small. Consequently the difference between tuition income and per-pupil costs is made up by gifts, donations, and some minor federal grant funds.

TABLE IV-1

INTER-INSTITUTION COMPARISONS

1971-1972	Church College of Hawaii	Chaminade College	U.S. Internat'l. Univ.- Maui	Hawaii Loa College
Tuition (Annual)	Pac. LDS-\$400 Mainld LDS- \$600 Non-LDS -\$900	\$1,000	\$1,890	\$1,200
Room and Board (Annual)	\$850	\$ 950	\$1,200	None
Financial Aid available to students (annual)	Total costs from LDS Church via gift, loan or work opport.	\$210,000	\$200,000	\$45,000
Enrollment	1300	900	120	173
1980 Enrollment (Projected)	2000	1200	1500	800
Operating Costs (Annual)	\$3,000,000	\$1,485,000	\$600,000	\$847,000
Endowment	n/a	\$25,000	none	none
Number of faculty and staff	185	85	30	38
Faculty salary range (Instr.-Professor)	\$8335 to \$19335	\$7092 to \$16920, all Religious faculty rec. flat \$4600/yr	\$8000 to \$10600 (all faculty are instr. or asst. prof.	\$7626 to \$15600

In this sense, the college problems, with the exception of Church College of Hawaii, are akin to that of the non-public elementary and secondary schools who must depend upon these same economic sources

for the money to keep them solvent. However, the church-connected elementary and secondary schools average nearly 80 per cent of the per-pupil costs from tuition and fees, while three of the colleges are less than 50 per cent from that source.

Faculty salaries in these four colleges are somewhat lower than the salaries in the public universities. This trend is similar to the relationship between private liberal arts colleges and the state university systems in the Western sector of the United States.

Overview

The four colleges surveyed in this study offer different and distinct choices in higher education to the residents of Hawaii. At the present time they collectively provide higher education for 2,500 students, employ 300 faculty and staff, spend approximately six million dollars per year within the state's economy, and own property and buildings worth millions of dollars. These institutions represent an excellent cross-section of the financial problems which face non-public higher education in the United States today. Their financial problems range from minor to major, and some are moving toward "the moment of truth" in the near future. In some cases, the closing of an institution can have an immediate and traumatic impact on the community that surrounds the institution. Should this be the case at any of the institutions surveyed in this study, this will also mean an added financial burden to the state of Hawaii, either in taking over the operation of the institution or absorbing additional students into the state public system of higher education.

Recommendations

At the present time it would appear that only three of the four institutions survey could conceivable be faced with a financial crisis within the next decade. Currently these three institutions enroll approximately 1100 Hawii residents. In the event that their projected enrollment expansion materializes, this would represent a maximum of 2500 students, which, if necessary, could be absorbed into the expanding University of Hawaii system.

If financial aid from state sources is to be considered, it should be in the form of resident tuition scholarships based upon financial need. Such scholarships would assist these colleges in stabilizing their enrollments while aiding the student rather than the college itself.

CHAPTER V

SURVEY OF STATE AID TO NON-PUBLIC SCHOOLS

The fourth request of the legislature was to conduct a survey of the various policies being pursued or considered by the federal government or the various states to assist non-public educational institutions to maintain their role in education.

The survey is designed to summarize what has been done or proposed by the other 49 states and what could be done by the state of Hawaii should it desire to furnish direct or indirect support to non-public educational institutions located within the state. At the present time 37 states furnish in some form direct or indirect support for non-public schools, kindergarten through high school. In addition, 35 states furnish in some form direct or indirect support for non-public institutions of higher education located within their state. Finally, 25 states support their resident students attending non-public institutions in other states through regional compacts such as the New England Board of Higher Education, the Southern Regional Education Board, and the Western Interstate Commission for Higher Education.

Sections A and B which follow outline procedures currently utilized or being proposed by the various states to assist non-public education:

Section A--State aid to private and parochial schools, K-12

- 1) Transportation to and from school (23 states)
- 2) Driver education (5 states)
- 3) Health services (10 states)
- 4) Purchase of textbooks (10 states)
- 5) Purchase of services, full or partial payment of lay teachers' salaries (16 states)*
- 6) Leasing of parochial school facilities for use by public and parochial school students (1 state)
- 7) Joint purchase of supplies and equipment with public schools (1 state)
- 8) Education voucher. State gives check pro-rated on public school costs (now in experimental stage in 1 state)
- 9) Per-pupil aid. Secular courses taught by public school teachers in parochial schools (2 states)*
- 10) Tuition scholarship. Direct grant to parents based on family income (10 states)
- 11) Shared time (dual enrollment). Student attends both public and parochial schools on a shared time basis (8 states)
- 12) Assistance to rural children where no public schools are available (1 state)
- 13) Assistance to handicapped children where no public schools with special facilities are available (3 states)
- 14) School lunch (2 states)
- 15) Provision for testing services (2 states)
- 16) Payment of administrative costs such as maintenance of attendance and health records (1 state)
- 17) Grants to low-income parents (2 states)
- 18) Grants for innovative programs (1 state)
- 19) Released time. Allows public school students to attend a parochial school for a specified period of time to receive religious training.

- 20) Auxiliary services. Health and nursing services, psychological testing, remedial reading, salary of school crossing guards (5 states)
- 21) Vocation education. Parochial students attend public-financed vocational schools (1 state)
- 22) Grant for instructional materials, audio visual equipment (1 state)
- 23) Income tax credit for parents (4 states)
- 24) Teacher retirement. Lay teachers may participate in school retirement programs (1 state)

*No longer legal because of a U.S. Supreme Court ruling

In thirteen states no aid to non-public education is granted in any form, kindergarten through high school.

Section B--State aid to non-public institutions of higher education

- 1) State assistance in creating "semi-public" universities such as Cornell, Temple, and Pittsburgh (2 states)
- 2) Capital construction assistance (12 states)

Enables non-public institutions to borrow money for construction of educational facilities through self-financing corporations which issue tax-exempt bonds.

- 3) Direct grants (9 states)

Four states make outright unrestricted grants to specific private institutions. Two states' grants are based on earned degrees. Four other states provide per-capita enrollment-based subsidies for specified programs such as medicine, nursing, and the disadvantaged.

- 4) Contractual arrangements (5 states)

Five states contract for educational services and places for students at private institutions within the state.

In addition, at least 25 states use contractual arrangements made through a regional agency to provide educational places or student aid at private out-of-state institutions. Hawaii currently utilizes the Western Interstate Compact to assist resident students in medicine, dentistry, optometry,

physical therapy, and occupational therapy to obtain training in the health sciences at both public and private institutions within the western region.

Support of students--twenty-four states provide general competitive scholarships based on ability and need for use at both public and private institutions.

5) Tuition-equalization grants (7 states)

Seven states provide an amount paid to or for a student who has been admitted to a non-public school as a means of reducing the differential between public and private tuition and fees.

6) Incentive Grants-in-aid (12 states)

Non-repayable tuition grants awarded to needy and disadvantaged students.

7) War orphans grants (30 states)

Benefits similar to the G.I. Bill for children whose parent or parents were killed or totally disabled by war.

8) Handicapped students grant (2 states)

Direct grants for students with physical handicaps such as blindness.

9) "Native" races grants (2 states)

Two states give grants to attend public or non-public institutions to residents who are Indians, Eskimos, etc.

10) Cancellable Scholarship loans (5 states)

Loans for study in areas of state need are forgiven for in-state work in the field after graduation.

11) Direct loans (10 states)

Direct loans for eligible and needy students attending any institution of higher education.

12) Guaranteed loan program (50 states)

Each state has one or more guarantee plans for its students and 20 states have state-guaranteed student loan programs operated by state agencies. This widespread form of student assistance is coordinated under the Higher Education Act of 1965.

The federal government has been involved in furnishing direct and indirect support to both public and non-public education for many years, particularly the past 25 years. There are literally hundred of programs provided by such legislation as the:

- National School Lunch Act of 1946
- National Science Foundation Act of 1950
- National Defense Education Act of 1958
- Economic Opportunity Act of 1964
- Elementary and Secondary Act of 1965
- Higher Education Act of 1965
- Children Nutrition Act of 1966

Constitutional limitations

The constitutions of most states forbid direct appropriation of tax funds to institutions that are privately controlled or under sectarian religious control. Hawaii is one of the states that has constitutional limitations forbidding direct aid to non-public educational institutions.

Recommendations

Barring an amendment to the Hawaii State Constitution, and in the light of recent U.S. Supreme Court decisions, it would appear that the only way that the state of Hawaii could provide support for non-public educational institutions in the foreseeable future would be through the indirect method of assisting students through loan and scholarship grants and tax credit for parents. At the present time state funded loans, tuition waivers, and scholarships are available only in higher

education at the various campuses of the University System.

In order to assist residents attending non-public educational institutions within the state, the usual procedure is to create a separate foundation, corporation, or commission to administer scholarship and/or loan programs. This body could formulate criteria for scholarship and loan awards and administer the program in a manner similar to that currently operated by the various financial aids offices of the University of Hawaii system for the awarding and distribution of Hawaii State Loans and Legislative Scholarships.

CHAPTER VI

POLICY ALTERNATIVES

The fifth request in Senate Resolution 105 is for the University to identify public policy objectives which would guide formation of public policy with respect to non-public schools. A statement of policy objectives relative to financial support of non-public schools has been framed in terms of policy alternatives. The alternatives for the state of Hawaii are limited by judicial decisions and constitutional mandates which are outlined in this chapter.

Recent judicial decisions

Two landmark United States Supreme Court decisions decided on June 28, 1971 have a profound affect on possible public policy formulation with respect to non-public schools in Hawaii. The cases, *Lemon v. Kurtzman*¹ and *DiCenso v. Robinson*,² which were consolidated into one decision by the court, severely curtailed the range of policy alternatives of any state in terms of attempting to aid parochial schools.

In the *Lemon* case, the constitutionality of a statute of the state of Pennsylvania, which allowed the state to "purchase secular

¹310 F. Supp. 35 (E.D.Pa.) reversed and remanded 39 U.S.L. Week 4844 (U.S., June 28, 1971) (No. 89).

²316 F. Supp. 112 (D.R.I.), affirmed 39 U.S.L. Week 4844 (U.S. June 28, 1971.) Nos. 569 and 570).

educational services," was tested. The statute allowed the state to pay non-public schools for the costs connected with the teaching of secular subjects (i.e., math, science, foreign language, etc.) providing no religious dogmas were included in the work. The lower court had upheld the statute as being secular in interest and non-violative of the First Amendment.

The DiCenso case involved a Rhode Island statute which allowed non-public school teachers to receive a salary supplement from the state when certain certification rules had been met. This practice was found unconstitutional by a district court. The two cases were subsequently appealed to the United States Supreme Court.

Both statutes were found to be unconstitutional as violative of the First Amendment "Establishment," the tests being that: A) A statute must have a secular purpose; B) The statute may neither advance nor inhibit religion; and C) There should not be entanglement between the state and any religion. The court went further to specify what types of aid are permissible to schools by saying:

"Our decisions from Evenson to Allen have permitted the states to provide church-related schools with secular, neutral or non-ideological services, facilities or materials. Bus transportation, school lunches, public health services, and secular textbooks supplied in common to all students were not thought to offend the Establishment Clause."³

The court sought to further clarify its position in relation to the purchase of services by stating:

"The Pennsylvania statute moreover has the further defect of providing state financial aid directly to the church-related school. This factor distinguishes both Allen and Evenson for

³Lemon-DiCenso, 38 LW 4844, p. 4848.

in both those cases the Court was careful to point out that the state aid was provided to the student and his parent, not to the church related school."⁴

Lemon-DiCenso makes clear the prohibition against any state allowing direct aid, either large or small, to parochial schools, even if there are strict procedural guidelines to assure the money is spent for secular aspects. However, the child-benefit theory remains intact as far as the United States Supreme Court is concerned.

Public policy formulation in Hawaii is further defined by the reference to the child-benefit theory by the State Supreme Court in *Spears v. Honda*.⁵ The court found the language of Article IX, Section I of the Hawaii Constitution prohibiting appropriation of public funds for benefit of sectarian or private schools to be clear and unambiguous. The Court cites the report on the Committee on Education of the Constitutional Convention of 1950 which rejected the child-benefit theory as applied to bus transportation and similar general welfare programs for non-public school students, the only exclusion being the use of public money for dental and public health services in the private schools.

It would appear that in Hawaii any efforts to render financial assistance to non-public schools would have to occur in a manner which would not make any direct appropriation of funds for support or

⁴Ibid. p. 4850.

⁵*Spears v. Honda*, 449 P 2nd 130.

benefit of either private or sectarian schools. Perhaps a form of indirect aid payments to parents such as an educational voucher or an additional tax refund may be a basis for public policy decisions.

Educational voucher system

Educational voucher system proposals have been suggested by economists as a remedy for several of the ills of the nation's education system. Milton Friedman is perhaps the best known proponent of the voucher system. He has proposed an educational voucher which each family could spend at the school of its choice, either public or private. Each family may supplement the voucher with its own funds to purchase the quality of educational experience it chose for its children.

In another well conceived plan, John E. Coons⁶ has suggested a state operated system of different priced schools; the price would be based upon per-pupil expenditures. The parent could choose the price school to which he wished to send his child, and he would contribute to the state's payment of the total cost of both public and private schools through a graduated add-on income tax. In the Coons plan, the parents would not be able to supplement the amounts paid to the schools so the entire cost of any school would be borne by the state subsidy.

The key point of these and other general voucher plans is that the entire educational enterprise of a state would be operated under the voucher system. While such plans have been a part of the economics

⁶See Coons and Sugarman, "A Model System for State Voucher Plans," 59 Calif. L. Rev. 321, 1971; and Center for Study of Public Policy, Financing Education by Grants to Parents, 1970.

of education since at least 1926, no state has adopted a general voucher concept. Clearly such plans are beyond the intent of the present study and are therefore dismissed from further attention.

At least three states have considered, although not passed, voucher plans which would be used by parents of non-public school students. It would appear that a limited purpose voucher plan to aid parents of non-public school students only would be questionable in Hawaii because of the language of Section IX, Article I of the State Constitution. Since a limited voucher plan would be used only in the non-public schools and the money to pay the voucher would come from a state appropriation, it might not meet the constitutional test delineated by the Court in *Spears v. Honda*.

Tax credit to parents

A final alternative which has received attention nationally is a system of tax credits for parents of non-public school students. A tax credit plan for parents who have children attending institutions of higher education as well as elementary and secondary schools is presently in force in Hawaii.⁷ No differentiation in the amount of the credit is made between children who attend public and non-public schools.

Possible extensions of the present tax credit act to further aid parents of non-public school children would involve public policy consideration based upon one or more of the following assumptions:

⁷Hawaii, Revised Statutes, "Tax Credits for Students Attending Institutions of Higher Education and for Dependent Children Attending School in Grades K-12," 235-17.

1) Additional assistance should be based upon the consideration of tax equity for parents of non-public school students. The rationale in favor of a differential is based upon the idea that parents pay taxes for support of schools which their children do not attend. A tax credit would tend to equalize the total educational burden in dollars. It is reasoned that the lower tax liability would represent in part the fact that their children were not using the public schools, thus not costing the state any money.

The rationale for not furnishing tax relief is that the public schools are open for all students, and if parents choose to send their children elsewhere for the educational experiences, that free choice should not be a reason reducing their tax liability.

2) The policy of the state might be to encourage alternative systems of education in Hawaii. The rationale supporting this policy is that some children may not learn well in certain educational environments, thus the state should attempt to encourage alternatives which will best suit the learning styles of all individuals.

The reverse of that argument may be found in the testimony of the Committee on Education of the Constitutional Convention of 1950. The Committee supported complete neutrality in regard to encouraging alternatives to public education by mandating that no appropriations could be used to support private or sectarian education.

3) Private schools should be encouraged because they save the state money, and their collapse would place an intolerable burden on the educational budget of the public schools.

This study is concerned with that contention. There is no

question that the cost impact would be immense if all non-public schools closed at the same time. However, it appears that several of the schools involved in this study are in little or no danger of closing during this decade. The desire for non-public education exceeds the available openings at the secondary level. The issue is more clouded in the elementary schools where several schools appear to be in difficulty both financially and enrollment-wise. The projected cost impact of their closing is cited elsewhere in this study.

An additional public objective which must be weighed when approaching the question of possible public assistance to non-public schools is the attitude of the institutions toward such aid. Each institutional representative was queried on that subject, and the results were mixed. One group comprising approximately one-third of the schools in the study were opposed to aid from government sources. The reason most often cited by this group was religious restrictions in their church against government assistance in any form. Another one-third of the representatives opposed any form of aid which would lead to additional controls by the state on their educational programs. The reasons cited were fear of a prescribed curriculum, or bureaucratic entanglements, and general limitation on their freedom of action. The remaining one-third either were non-committal or supported government aid even with the chance of increased government control over the schools.

Among all school representatives, the preference for the type of aid, if aid were forthcoming, was a direct payment or tax credit

to the parents. (It must be noted that the interviews were conducted after the Lemon-Decinso decision by the United States Supreme Court)

To summarize, the public policy alternatives relative to aid to non-public schools tend to center in the high court decisions. Lemon-Dicenso appears to have ruled out any form of direct aid to public elementary and secondary parochial schools throughout the nation. In addition, the state of Hawaii is prohibited from the class of aid commonly referred to as "child-benefit" aid. A system of aid which would issue vouchers to parents which they could use to purchase services from non-public schools might be subject to scrutiny under the constitutional interpretation established by the State Supreme Court in *Spears v. Honda*.

One form of financial aid which does not appear to have been the subject of adverse court rulings is some type of tax credit to parents of non-public school students. Hawaii presently has a statute which gives a tax credit to certain income groups which includes, but is not limited to, parents of non-public school children. Any proposed amendment to the present statute which would allow for a differential tax credit system for parents of non-public school students would have to be based upon a logical reason for such aid, such as:

- 1) To create a type of equity among parents who do not use the public schools.
- 2) To keep the non-public schools open as an alternative type of educational experience.
- 3) To save the state money by not having to finance the education of all the children in Hawaii.

If any type of aid to parents is forthcoming, public policy might require additional supervision in curriculum, school organization, and perhaps operating efficiency to enable a school to qualify so that parents of students attending that school could claim a tax credit. If such regulations were included, the bill would be unsatisfactory to the organizations which operate certain schools and possibly to the parents of the children in those institutions.

Finally, any proposed aid must not detract from the continued support of public education by the people of the state of Hawaii. Rather, it must represent an enlargement of the financial commitment toward quality educational experiences in the state.

APPENDIX

Appendix A

UNIVERSITY OF HAWAII

Educational Administration - College of Education

Dear

Senate Resolution No. 105, Hawaii Legislature, Sixth Session, 1971 requested the University of Hawaii to conduct a study on the effects of non-public school closures on the public sector, and the problems of non-public school financing (see enclosure). This task has been delegated to several members of the Department of Educational Administration of the College of Education. This letter is a formal request to your school to cooperate with the members of the research team in the preparation of this most important and worthwhile study.

An agreement to cooperate will entail furnishing data from your school in three major areas:

- (1) Mean scores by grade on whatever standard testing program is being implemented in your school, along with norming data when available.
- (2) Various data on revenue and expenditure, which would include such items as tuition rates for the last five years, per pupil costs, indebtedness for capital improvements, capital outlay, boarding costs (if they apply), endowment and gift incomes, as well as certain other costs for each of the last five years. None of the cost data will be identified by school in the report to the legislature. All reporting will be in ranges, by clusters of schools, and these arrays will be based upon school types and/or locations, not by individual schools.
- (3) Enrollment data, past and present, and a card which will be filled out by each student listing the public school which they would attend if they were not attending a private school (See page 2, clause 3, of the attached document) will be requested.

If these data are not available for the five-year period, the research team will work with the available data to determine whether a reasonable approximation for projection purposes can be extrapolated.

Time is of the essence; therefore, the team would appreciate a reply to the attached statement by August 15.

I look forward to a pleasant and fruitful working relationship with each of you.

Mahalo,

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*John A. Thompson*John A. Thompson
Associate Professor

Enclosures (2)

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Appendix B

The schools listed below were invited to participate in the study. Each school was sent a letter (with the exception of the Catholic Parochial Schools, for whom one letter was sent to the Diocesan Board of Education) and those who did not reply were sent a follow-up letter three weeks later.

The schools with the asterisk before their names are those who consented to furnish data for the study.

Honolulu District

1. Bingham Tract Kdgten. & Grade
- *2. Cathedral
- *3. Church of the Holy Nativity
- *4. Damien Memorial High
5. Epiphany
6. Hale Mohala
7. Hanahauoli
- *8. Hawaii Baptist Academy
- *9. Hawaii School for Girls
10. Hawaiian Mission Academy
- *11. Hawaiian Mission Elementary
- *12. Holy Trinity
13. Hongwanji Mission
- *14. Honolulu Junior Academy
- *15. Iolani
16. Island Paradise
- *17. Island Paradise Annex
18. Kaimuki Christian
- *19. The Kamehameha Schools
- *20. Maryknoll Grade
- *21. Maryknoll High
- *22. Mid-Pacific Institute
23. Mohala Pua
24. Our Redeemer Lutheran
25. Pacific Preparatory Academy
26. Playmate Kdgtn. and Grade
27. Punahou
28. Sacred Hearts Academy Grade
29. Sacred Hearts Academy High
30. Sacred Hearts Convent
- *31. St. Andrew's Priory
- *32. St. Anthony's

Honolulu District (con't.)

- *33. St. Augustine
- *34. St. Elizabeth
- *35. St. Francis High
- *36. St. John the Baptist
- *37. St. Louis High
38. St. Patrick
- *39. St. Theresa's
- *40. Star of the Sea Elementary
- *41. Star of the Sea High

Central District

- *1. Holy Family
2. King's
- *3. Pearl Harbor Christian Elem.
4. Navy Hale Keiki
- *5. Our Lady of Sorrows
- *6. St. Elizabeth
- *7. St. Michael's
- *8. Sunset Beach Christian
- *9. Trinity Lutheran

Leeward District

- *1. Children's House
- *2. Our Lady of Good Counsel
- *3. Our Lady of Perpetual Help
- *4. St. Joseph's